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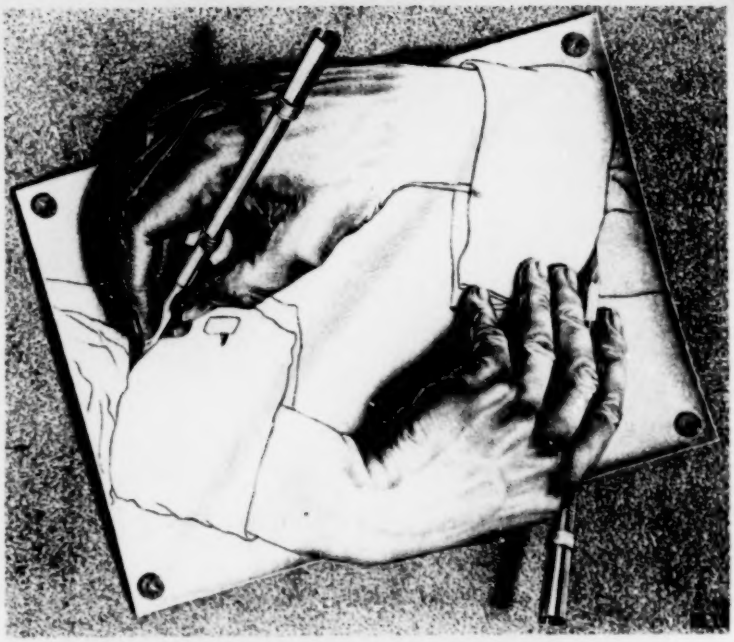

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Continued inside back cover.

BEHAVIORAL SELF-CONTROL–

ISSUES IN TREATMENT ASSESSMENT

BY BETTE RUNCK
STAFF SCIENCE WRITER, NIMH

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Foreword

Too often in the past, health care has been practiced as though patients were defective machines to be brought to the shop for repair. The expert physician was expected to diagnose the problem, repair the malfunction, and send the patient home until the next preventive maintenance or repair visit was needed. In this mechanistic view, patients were passive, the victims of diseases and disorders for which they had little responsibility and over which they had no control.

A new paradigm of medical care now is emerging, however, as an outgrowth of numerous studies underscoring the role of lifestyle, attitudes, and behavior in the onset and course of disease. Increasingly, patients are viewed as partners in their own health care. They are no longer seen as victims of mechanical failure but as responsible people who can play an active part in maintaining their health and in recovering from illness and injury. The role of health care providers is not simply to correct physiological problems but to teach people how to attain and sustain health.

The dramatic and rapid growth of behavioral medicine over the past decade attests to burgeoning professional interest in the role psychological factors play in physical health. Similarly, public interest in diet, exercise, and self-development techniques attests to the appeal of self-regulation as a means of asserting control over illness.

In such a climate, behavioral research exploring techniques of self-regulation has flowered, in ways this volume vividly documents. The blending of behaviorist and cognitive ap-

proaches inherent in this research area has given it conceptual "hybrid vigor," yielding a number of promising results. While the field has yet to establish the effectiveness of behavioral self-control techniques in overcoming the often intractable behavioral problems within its purview, the potential value of the approach is clear.

This report provides an overview of the theoretical foundations and major applications of self-control techniques to the treatment of diverse behavioral problems; obesity, particularly, is examined in depth. The report emphasizes the rigorous scientific assessment standards that must be satisfied before a treatment can be considered effective, with its active ingredients identified with certainty. By such standards, we still do not have a self-management technology that is unequivocally effective by itself as a treatment technique. Nonetheless, the emerging body of knowledge about how people monitor, regulate, and reward their own behavior provides an invaluable basis for further study and innovation in health care.

Herbert Pardes, M.D.
Director
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Preface

Once upon a litigious time ago, behavior modification was viewed by much of the public—and by many nonbehavioral psychotherapists as well—as a prime example of the maleficence of technological solutions to human problems. Its technical language, with its metaphor of manipulation and credo of control, projected an image of humanity as a hollow plaything of environmental forces. While this language was, by itself, frightening, the public's fear was exacerbated by publicity surrounding certain poorly constructed behavior-change regimens administered to nonconsenting captive populations within our prisons and psychiatric hospitals. During the early 1970s, behavior modification was caught up in the political, social, and legal controversy that developed within institutional psychiatry involving enforced treatment. Several behavior modification programs landed in court, where minds accustomed to litigation contemplated what were to be considered "constitutionally adequate reinforcers." The eye of behavior modification was blackened further by prison officials who misappropriated its name for whatever punitive, invasive program they could devise to keep their charges in line. Even psychosurgery and electroshock therapy, employed in primitive punishment paradigms in an effort to quell the rebellious tendencies of inmates, were deemed "behavior modification." Following this line of reasoning, use of the rack and the thumb screw may be seen as medieval behavior modification programs.

The controversy over behavior modification did, however, lead to a clarification of the critical issues underlying its appli-

cation. For what was not immediately obvious to the scientifically oriented behavior modifier was the fact that as soon as a program is planned to "control" someone's behavior (especially without the person's consent), one is dealing with a political question: Who is controlling whom by what means and for what ends?

This bad publicity was particularly unfortunate because the leaders in the field of behavior modification were, for the most part, very pragmatic, action-oriented idealists who wished to develop a behavior-change technology blessed by scientific accountability. Moreover, they wanted a technology that would be ethically neutral, that could serve any master, and that could accommodate a wide range of values. Partly as a result of the questions raised by civil libertarians about enforced treatment, some proponents of behavior modification proposed that their techniques be applied only at the patient's or prisoner's discretion and in the service of humanistic values.

With the appearance of self-control therapy, we can see just how far the "humanizing" of behavior modification has come. There is no question here of a behavior-change program being imposed upon an individual against his or her will. Not only does the patient consent to such treatment, but takes full responsibility for its conduct. Thus, *self*-control therapy does not require the constant surveillance that must accompany institutional behavior change programs.

This therapy, however, is no radical departure from the mainstream of clinical behavior therapy. It is a product of the same data-based pragmatism that has characterized behavior modification (or behavior therapy—its more clinical sounding alias) since its inception 25 years ago. Like most other behavioral treatment regimens, self-control therapy arose in response to the mundane, practical challenges of clinical practice. Behavioral clinicians confronted problems involving such covert or private events as thoughts, self-verbalizations, and cognitive strategies. The patient is in a better position than the therapist to monitor, evaluate, and, perhaps, to alter such private events. Behavioral clinicians also confronted more overt disorders which seemed to be fostered by events that occurred in the patient's everyday environment. Here again, the patient is in the best position to monitor such behavior. Self-regulation and self-control techniques appear to be an inevitable response to

such dilemmas by clinicians trained to deal only with observable behavior.

Behavioral clinicians who were originally trained in the operant school of behavior modification eventually came to see the limits of that model in explaining complex human behavior observed in their patients. They found it difficult to ignore the mediating influence of a patient's private life. Creative clinicians began to develop treatment regimens which, while still employing the language, assumptions, and principles of behavior modification, now were applied to disturbing and irrational beliefs and cognitions that were thought to play a central role in causing and sustaining particular disorders.

While behavioral clinicians were discovering the importance of cognitive processes for the development of effective treatments, basic behavioral researchers and cognitive psychologists were demonstrating the influence of cognitive processes on overt behavior. Self-control theory and therapy evolved as a specialized outgrowth of the "cognitive" movement in behavior modification. Self-control theorists recognized the same dilemma as the cognitive behaviorists: the apparent critical importance of private events in mediating behavior and, conversely, the apparent inadequacies of the operant model. Kanfer, one of the chief self-control theorists, pinpointed the two critical deficiencies of the operant model: its failure to acknowledge 1) that human beings respond to their own behavior, evaluate it, and even correct it; and 2) that they attend selectively to environmental stimuli. These two peculiarly human capacities render mute any explanation of behavior that relies on the influence of present environmental contingencies alone.

This conceptualization of human behavior and learning, unlike the operant model, projects an image of humanity as a class of beings capable of detaching themselves for varying lengths of time from immediate environmental forces. It is this ability to define and respond selectively to the environment that allows the individual some degree of self-direction and personal responsibility. Behavior theory is rendered more human thereby.

The introduction of a concept of self within behavior theory, however, is replete with irony. The theory and therapy of self-control evolved out of its antithesis, the hard-core environmentalism of Skinnerian operant conditioning, for it was Skinner

who first recognized the significance of self-control. True to his environmentalist assumptions, however, Skinner interpreted self-control in terms of "variables lying outside the individual himself." In other words, in terms of environmental contingencies.

A larger irony associated with self-control therapy, however, concerns the goal of the treatment intervention. The chief aim of self-control therapy appears to be the recrudescence of willpower, a concept that self-control therapists explicitly disavow. This form of therapy most frequently has been applied to a variety of behavioral disorders that share a common theme: the failure of the individual to resist the short-term enticements of a particular behavior despite its long-term adverse consequences. Behavior modifiers would reflexively reject any internal personality trait such as willpower. But the self-control therapy that they have devised actually applies a modern technological perspective to the task of instilling in their patients one of civilization's ancient verities: the need to resist, for reasons of health or morality, the dangerous attraction of certain actions. This resistance traditionally has been the defining characteristic of willpower.

The ability to exhibit self-restraint is only one of several humanistic values that now guide self-control therapy and other behavior modification programs. A second value is self-awareness—the cardinal virtue of philosophical humanism and a value incorporated in most of the major schools of psychotherapy. But rather than becoming aware of unconscious conflicts or one's moment-to-moment flow of subjective experience, the self-awareness promoted by self-control and cognitive therapies involves the contingencies, both internal and external, which govern one's behavior. By becoming aware of these, one can directly modify either the internal or external stimuli or one's responses to them, thus acquiring the power to control one's own behavior.

With the introduction of cognitive and self-control theories and therapies, behavior modification has reduced the gap between its guiding assumptions and those of other schools of psychotherapy. Some therapists of other schools may still cringe when they hear about a "behavior technology," but the similarities between behavioral and other therapists are beginning to outweigh if not overwhelm their differences.

And what of the current efficacy of self-control therapy? As the following report makes clear, self-control techniques typically can produce moderately positive changes across a variety of behavior disorders, including the various forms of substance abuse, depression, and insomnia. Despite these modest findings, the theory and the therapy of self-control represents a significant development within the field of behavior modification. Self-control theory has humanized operant conditioning while not completely abandoning its emphasis on stimulus-response connections. The therapy indirectly enhances our patients' sense of personal responsibility for their own lives while teaching them to modify their "vices." The behavior modifier's consistent emphasis on actions reflects the can-do idealism that has always energized this field. Self-control therapists, in particular, would resonate with William James' maxim: "With mere good intentions, hell is proverbially paved."

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ON THE COVER

Drawing Hands
M. C. Escher

National Gallery of Art
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Contents

	Page
FOREWORD	
Herbert Pardes	iii
PREFACE	
Barry E. Wolfe	v
THE BEHAVING SELF	1
Why the Interest in Self-Control?	4
A New Synthesis	5
Self-Control Methods	7
Contracts	7
Self-Monitoring	8
Tasks and Assignments	8
Stimulus Control	8
Self-Generated Consequences	9
Covert Conditioning	9
The Origins of Behavioral Self-Control	10
BEHAVIORAL THEORIES OF SELF-CONTROL	17
Kanfer's Self-Regulation Model	18
Bandura's Self-System	21

ASSESSMENT ISSUES—THE EXAMPLE OF OBESITY
Research Strategies
Treatment Package Strategy
Comparative Treatment Strategy
Dismantling Treatment Strategy
Constructive Treatment Strategy
Parametric Treatment Strategy
Client/Therapist Variation Strategy
Single-Subject Designs
Uncontrolled Studies
The Status of Behavioral Treatment of Obesity

OTHER BEHAVIORAL PROBLEMS AND DISORDERS
Smoking
Alcohol Abuse
Depression
Insomnia

SUMMARY

REFERENCES

The Behaving Self

Americans today are building their own homes, mending their own fences, refinishing their own furniture, repairing their own cars, and restructuring their own behavior. Do-it-yourselfers have adopted behavior therapy. The evidence is everywhere: Colleges and community groups offer night classes in everything from controlling anxiety to living with success. Self-help books outline the rudiments of behavioral analysis. Newspaper ads promise miraculous transformations to those who will sign up immediately. Businesses prod employees to join self-management programs. Gadgets for counting and recording behavior share supermarket space with apples and soap. Graphs and charts marking behavioral progress adorn kitchen walls and closet doors across the land.

The objective of all this activity: nothing less than achieving self-control. The searchers include the overweight, the anxious, the depressed, the disorderly, smokers, procrastinators, alcoholics—in other words, potentially every second or third person on the street.

Popular enthusiasm for training in self-control is the latest manifestation of the apparently insatiable public hunger for a self-improvement technology. Decades ago, people stood in front of the mirror and told themselves, "Every day, in every way, I'm getting better and better." Dale Carnegie came along and told us all how to win friends and influence people. Then, starting in the sixties, the book shelves and night school catalogs became filled with promises of quick fixes for everything that might ail us. We have been taught to increase our ESP,

massage our psyches, pull our own strings, encounter one another.

Now comes behavioral self-control, an amalgam of can-do behaviorist techniques, tempered by psychology's renewed appreciation of subjective experience. Self-control strategies are taught chiefly by behavior therapists, psychologists who believe that what people actually do—their behavior—is the proper target of treatment for psychological distress. Behavior therapists attempt to change behavior by altering its consequences, by rewarding it when it's "good" and, sometimes, by punishing it when it's "bad." They also teach their clients how to relax, show them how to behave by exposing them to appropriate models, and use a variety of other techniques to induce the changes in behavior which they take to be the goal of therapy. In contrast to earlier practice, behavior therapists increasingly attempt to alter their clients' beliefs, attitudes, thoughts, and emotions—all forms of "behavior," according to some.

Self-control techniques are among the latest to be added to the behavior therapist's repertoire. They, like other behavioral methods, are directed at correcting troublesome behaviors which, in the behaviorist view, are simply the product of faulty learning experiences. Unlike traditional "talk" therapies, behavioral approaches pay little attention to putative intrapsychic causes of a problem. In other respects, however, behavior therapy has drawn closer to psychotherapy in both theory and practice. Without these changes, some of the self-control strategies now employed would have been unthinkable.

Rather than delve into the patient's history, as is done in the psychodynamically oriented therapies, the uncompromising behaviorist concentrates on the here-and-now. This difference in perspective is evident in the case of a man with marital problems who one day started to tell his behavior therapist about his childhood. The therapist cut him off, and the man was confused. The following conversation ensued:

> "Shouldn't I talk about this with a psychologist?" he asked. "Isn't this one of the things that interests you? Doesn't it affect me now?"
>
> "Look," I said, "a bridge with a load limit of three tons opens in 1903. The next day, a farmer drives 18 tons over it; it cracks. The bridge collapses in 1963. What caused the collapse?"

"The farmer in 1903," he said.

"Wrong," I said. "The bridge collapses in 1963 because of the cracks that day. Had they been filled in the preceding day, it would not have collapsed. Let's discuss the cracks in your marriage." (Goldiamond 1965, p. 859)

While such dyed-in-the-wool indifference to the client's history once typified the behaviorist position, all but a few of today's behavior therapists would take a more flexible approach. As Carl Thoresen, who represents this new breed, has noted, most behavior therapists would now pay attention to the *pattern* of experience in 1903 and 1963 with "primary but not exclusive concern given to recent events."*

Earlier applications of behavior modification typically took place in institutional settings. Like a benign Svengali, the behavior modifier gave out rewards or punishments to manipulate the behavior of clients or patients. In "token economies" on psychiatric wards, for example, a specific instance of a patient's good behavior was rewarded immediately with tokens redeemable for goods and privileges. Making his bed might earn a patient enough tokens to buy a candy bar.

While such institutional applications still abound, today's behavior therapy as often takes place in an office or clinic. Behavior therapists now must deal with behavior that is outside of their direct control. Instead of the publicly observable acts of a patient on a ward, the object of treatment is often private behavior—the hundreds of tiny decisions that can add up to a set of problems rather than a satisfying life. Self control techniques were developed to deal with such problems.

In practice, clients are first taught to recognize the problem as it begins, then to analyze and monitor the problematic behavior and the thoughts, feelings, and events surrounding it. Second, they evaluate the circumstances under which the behavior occurs. Third, they arrange the environment or their skill repertoire to make the desired behavior more likely to occur. And finally, they reward themselves for doing what they had set out to do. People who are trying to lose 30 pounds, for example, might, among other strategies, record everything they

*For a description of what behavior therapists do in practice and its relationship to theoretical models, see Thoresen (1980).

386-848 O - 82 - 3

eat, determine which fattening foods are most tempting, rid the house of them, and buy themselves a trinket each time they lose 5 pounds. They might be taught to relax, to observe the behavior of successful dieters as models for their own actions, and to modify what they think about the problematic behavior.

Such tactics are, of course, as old as humankind. What behavioral self-control seems to offer is a structured method, usually combined with another person's guidance and concern. It also offers an antidote to the cultural habit of ascribing self-control to willpower. Behavior therapists, by contrast, see self-control as "something a person *does* instead of something he or she *has*" (Mahoney and Arnkoff 1978). The behavior therapists, in other words, are trying to make willpower accessible to everyone.

WHY THE INTEREST IN SELF-CONTROL?

Contemporary interest in self-control coincides, perhaps not fortuitously, with a period in which traditional American values are being reasserted. Frederick Kanfer, a guiding force in the self-control movement, noted some years ago that the value system in the United States "still accepts restraint, moderation, resistance to temptation, and sacrifice as inherently good and desirable." Self-control is the *sine qua non* of responsible behavior. We admire people who discipline themselves. And we attach great value to the ability to plan for the future and to behave in ways that achieve planned ends. In a culture such as ours, delaying gratification, resisting temptation, and tolerating unpleasant situations are essential to personal advancement. Furthermore, self-control is a requisite of moral behavior. Survival of the group depends on the ability of individual members to control inclinations to gain personal benefits. In a free society, self-regulatory behavior takes the place of social surveillance.

Economic conditions also make the 1980s an opportune time for self-control. Learning skill in self-management is an inexpensive way to improve health. Many applications of self-control techniques are directed at helping people take better care of themselves, primarily by improving their personal habits. Self-control strategies are also taught to patients who must adhere to specific medical regimens. Whether these efforts are remedial or preventive, self-control in the service of health is

part of the new emphasis on behavioral medicine. Teaching people to take care of themselves not only offers economies in health care, but may be the only way that cardiovascular disease and other disorders can be controlled.

The immediate reasons why behavior therapists recently turned their attention to self-control were day-to-day problems in carrying out their work. Traditionally, when working with a client, the behavior therapist or some other agent—a teacher, helper, or friend—not only devised the method for change, but also evaluated performance and rewarded or punished accordingly. But several kinds of behavior do not lend themselves to that kind of behavior modification. Private thoughts and self-critical statements are not readily observed by a behavior therapist. Nor are sexual behavior, overeating, and other types of everyday activities. Even in more confined situations, such as classrooms, observers simply miss a good deal of the behavior that is the target of a change program. A related problem is that the presence of the therapist can become a cue that triggers the desired behavior. Thus, the behavior may not occur without the observer, or therapist.

Perhaps the most serious problem in traditional behavior therapy programs is the difficulty of maintaining and generalizing change. The goal of behavior therapy is not simply to help someone change for the duration of the program, but to make a difference in the person's life. Maintaining the changes begun in treatment is one goal. Adapting and applying what is learned in treatment to other behavioral problems is another. Self-control strategies work toward these goals from the beginning of treatment.

A NEW SYNTHESIS

Self-control strategies intended to meet the clinical purposes of behavior therapy are coincidentally serving another purpose. According to Kanfer, they represent a synthesis of behavior therapy and psychotherapy. They achieve this synthesis by introducing into behavior therapy such elements as the use of self-reports, methods for altering thinking and imagery, and concern about the client's attitudes and motivation to change. "In essence," writes Kanfer, "self-management therapy represents a new stage in behavior therapy. It emphasizes an active

rather than a passive model of man and leans heavily on an interactional view of personality."

It is this interactional view that distinguishes the theoretical stance of the self-control therapists from traditional behavior therapy. According to the traditional operant conditioning paradigm, behavior is shaped and regulated solely by environmental stimuli; the consequences of behavior determine whether it is maintained, and the sources of these consequences are to be found in the environment. In essence, there is "only situational control of apparent self-directed acts" (Franks and Wilson 1978). The perspective of the self-control therapies, by contrast, accounts for the "self" that is responding to external stimuli. Cognitive factors, such as selective attention to stimuli, determine which stimuli *can* affect behavior, while other cognitive factors, such as interpretation of meaning, determine how powerful the effect is. The thinking self also becomes the agent for delivering the consequences of behavior. Thus, while self-control techniques are, for the most part, based on conditioning techniques, there is a crucial difference: The client serves as both the agent and the object of change. In the self-control therapies, the therapist's role, as described by Kanfer, is that of an instigator and motivator.

> The responsibility for carrying out the program and for maintaining the effectiveness of the procedures ultimately lies with the client. The therapist provides the support needed by the client . . . at the very outset of the change program, the client must be made aware that it is not *within* the session with the therapist, but *between* these sessions that the change occurs. (Kanfer 1975, p. 310)

Success of such a program, according to Kanfer, "demands greater commitment and higher motivation by the client than do programs based solely on environmental control."

The cognitive therapies, such as Albert Ellis' Rational Emotive Therapy, have much in common with the self-control therapies, especially in their emphasis on the role of cognitive factors in mediating environmental influences. They are sometimes considered a form of self-control. In fact, it might be said that self-control is the goal of *all* forms of psychological and behavioral treatment. For the purposes of this report, however, the rubric "behavioral self-control" refers only to those treat-

ment strategies that use primarily behavioral rather than cognitive elements in the rationale for treatment and some cognitive techniques in its execution. Further, following Kanfer, self-control is limited by the nature of the problem to be changed. According to Kanfer,

> When we speak of self-control problems we usually emphasize the client's dilemma in embarking upon a behavior change when his current actions give him at least some degree of gratification. It is the building of a controlling response and the conflicting consequences of the current behavior that differentiate self-control problems from those in which self-management is used to rearrange behavioral schedules, to learn how to identify and solve problems, to acquire new skills, or to engage in activities that do not alter the behavioral consequences very much. (Kanfer 1975, p. 349)

"Self-control," as used here, reflects the use of the term most prevalent in the behavioral literature. It refers to a set of treatment strategies used by behavior therapists to help their clients gain control over problematic behavior—usually habits—that gives pleasure in the short run but pain in the long run. A broader perspective on behavioral self-control can be found in Goldfried and Merbaum (1973) and Thoresen and Mahoney (1974).

SELF-CONTROL METHODS

Although most behavioral techniques can be adapted for a self-control approach, those commonly used in self-control therapies include contracting, self-monitoring, tasks and assignments, stimulus control, self-reinforcement, self-punishment, and covert conditioning.* Kanfer believes that the behavior therapist's first task is to motivate the client to change, since self-control, by definition, involves behavior that is inherently reinforcing. Contracts, self-monitoring, and specific task assignments all help to create the conditions for change.

Contracts

Formal, written contracts are widely used in all types of behavior therapy. Typically, they require small, very specific

*Kanfer and Busemeyer (in press) have recently outlined problem-solving and decision-making strategies that can be used in behavior therapies as well.

changes, which are gradually increased in successive contracts. Contracts can be made between the therapist and the client or by the client with himself or herself. The enhanced sense of control engendered by such contracts can motivate clients and encourage their commitment to change.

Self-Monitoring

Most self-control programs include, as an early step, some procedure for observing and counting the behavior to be modified. A smoker wears a wrist counter, for example, and ticks off every cigarette smoked. A weight watcher keeps a tally of calories. A student makes a note of what distracts him from studying. Such counts are measured against the standard the person wishes to achieve, and other procedures are implemented to meet that standard. However, self-monitoring is itself "reactive"—that is, the simple act of taking note of behavior can change it. Thus, self-monitoring is often used alone as a self-control technique, or at least as part of a larger program of self-control.

Tasks and Assignments

Giving specific assignments for the client to undertake between treatment sessions is characteristic of many behavior therapy programs but is central to self-control strategies. The requirement is usually for some small, specific bit of behavior that will encourage clients to believe that change is possible through their own efforts. For example, Kanfer asked one shy and insecure young woman to go to a social gathering specifically to collect information about the job histories of several guests. From that experience, she learned that she could initiate conversations in situations that made her anxious.

Stimulus Control

This technique is based on the observation that stimuli regularly associated with a particular behavior soon serve as cues to elicit that behavior. Sitting in a favorite chair watching television might, for many, come to be associated with munching potato chips. If done often enough, before long, simply sitting in the chair makes one's mouth water for potato chips. Usually the goal of treatment is to limit or change the stimuli that

elicit a particular behavior. To reduce potato chip consumption, for example, one might choose to confine it to a particular spot in the house—say, at the kitchen table—thus gradually eliminating the cues provided by the favorite chair and television set.

Self-Generated Consequences

In traditional behavior modification programs, the teacher, parent, or therapist controls the consequences of a child's or client's behavior. If a pre-established standard of performance is met, rewards are meted out; if not, then some form of punishment may be used. In self-control therapies, the client controls these rewards and punishments, choosing a reward or some unpleasant consequence—depending on the performance turned in. A dieter who eats no more than a certain number of calories may add some money to a fund for a wanted but frivolous object. If too many calories are eaten, the money may have to be donated to some cause which the person finds repugnant. In either case, the person sets the standard to be met, then is freely able to reward or punish. Increasingly, the trend has been to use symbolic consequences (such as self-congratulation) rather than tangible ones. Many workers no longer view self-reinforcement simply as the administration of either tangible or symbolic consequences but rather as feedback. The fact that the person has met or is approaching a preset goal is highlighted by self-reinforcement, and this information helps to maintain or enhance motivation.

Covert Conditioning

This technique is related to the use of symbolic consequences in administering self-reward or self-punishment. In essence, the conditioning is applied to private events. In covert sensitization, the client imagines adverse consequences of behavior targeted for change. For example, a dieter imagines eating a candy bar, then imagines vomiting it all over the clothes of a passing stranger, with a beloved member of the opposite sex watching. While still sometimes used, this approach has usually not been found effective.

Ben Franklin's Virtue

No less a personage than Benjamin Franklin was an early practitioner of behavioral self-control. Unlike his modern counterparts, Franklin had no behavior therapist to outline the steps to take. Franklin designed his own method, which bears a remarkable resemblance to the program now being used.*

Franklin's goal, to achieve moral perfection, was considerably more ambitious than those of contemporary behavior therapy. Any one of his 13 "virtues" might well be a target behavior attacked in a modern behavioral self-control program.

Franklin started by noting, under each virtue, the behavior he wished to rectify. Under *temperance*, for example, he commanded himself to "Eat not to dullness: drink not to elevation." Under *industry*, "Lose no time; be always employ'd in something useful; cut off all unnecessary actions." Under *chastity*, "Rarely use venery but for health or offspring; never to dullness, weakness, or the injury of your own or another's peace or reputation."

Good behavior modifier that he was, Franklin tackled one virtue at a time. He monitored how well he did at that virtue and recorded his behavior on the other 12 as well. Every night he set aside time to examine his behavior for the day, giving himself a black mark for each transgression.

Had he been under the tutelage of a behavior therapist, Franklin would have been instructed to record his behavior at the moment it occurred. For this, he might have worn a wrist counter, had one been available. Other details, too, might have been different. But the idea was the same: Even so abstract a goal as virtue could be broken down into manageable behavioral components.

*Thanks to Mountjoy and Sundberg (1981), Knapp and Shodahl (1974), and Snortum (1976) for pointing out these similarities.

THE ORIGINS OF BEHAVIORAL SELF-CONTROL

The self-control techniques now used in behavior therapy grew from a few case studies done in the middle and late 1960s. These, in turn, owed a debt to B.F. Skinner, the consummate behaviorist, who devoted a chapter of his 1953 book, *Science and Human Behavior*, to self-control. Skinner set the stage for the later work, declaring that self-control was nothing but a form of behavior. People control their own behavior precisely

as they would control the behavior of anyone else—"through the manipulation of variables of which behavior is a function." Such behavior "is a proper object of analysis, and eventually it must be accounted for with variables lying outside the individual himself."

Skinner cataloged the techniques individuals characteristically use to control themselves. For example:

> The individual may jam his hands into his pockets to prevent fidgeting or nail-biting or hold his nose to keep from breathing when under water. He may present himself at the door of an institution for incarceration to control his own criminal or psychotic behavior. He may cut his right hand off lest it offend him. (Skinner 1953, p. 231)

In addition to such physical restraint, individuals control themselves by changing the stimulus (e.g., putting a box of candy out of sight), by satiating or depriving themselves (e.g., skipping lunch before a free dinner), by manipulating emotions (e.g., rehearsing a history of injustice before asking the boss for a raise), by drugging themselves, or by "doing something else" (e.g., taking a walk to avoid watching television). More problematic, in Skinner's view, is the use of self-reinforcement or self-punishment. Presaging what was to become a hotly debated issue, Skinner doubted whether "self-reinforcement" actually exists. Although self-administered, such control is ultimately in the hands of external forces, according to Skinner. He saw the community as the eventual source of self-control:

> It is easy to tell an alcoholic that he can keep himself from drinking by throwing away available supplies of alcohol; the principal problem is to get him to do it. We make this controlling behavior more probable by arranging special contingencies of reinforcement. By punishing drinking—perhaps merely with "disapproval"—we arrange for the automatic reinforcement of behavior which controls drinking because such behavior then reduces conditioned aversive stimulation . . . society is responsible for the larger part of the behavior of self-control. (Skinner 1953, p. 240)

Thus, Skinner's venture into self-control remained firmly rooted in environmentalism. The possibilities suggested by his discussion were, however, largely ignored until the mid-1960s,

386-848 O - 82 - 4

when Israel Goldiamond published a report of several case histories using methods that imaginatively applied behavioral principles to helping people gain self-control.

With two of his clients, an overweight man and a young woman with difficulties in studying, Goldiamond used stimulus-control techniques. The man was taught to bring eating under the control of food alone by devoting himself to eating only at mealtime, not while watching television or studying. Television, studying, and other stimuli thus lost their control over the chain of behaviors that resulted in snacking. The woman was told to let her desk control her studying. "If she wished to write a letter, she should do so in the dining room; if she wished to read comic books, she should do so but in the kitchen; if she wished to daydream, she should do so but was to go to another room; at her desk she was to engage in her school work and her school work only."

Goldiamond used a stimulus-change technique with one couple having difficulties in the wake of the wife's "ultimate betrayal" with the husband's best friend. The couple agreed that their marriage was worth preserving but had been unable to overcome problems caused by the wife's infidelity. To establish novel stimuli that would be associated with new behavior, the couple was told to rearrange the furniture in their house. Then, Goldiamond helped the man establish alternative behavior to yelling at his wife. Next, he instituted a stimulus-control strategy for eliminating the man's sulking.

> S was instructed to sulk to his heart's content but to do so in a specified place. Whenever he felt like sulking, he was to go into the garage, sit on a special sulking stool, and sulk and mutter over the indignities of life for as long as he wished. (Goldiamond 1965, p. 857)

Inspired by Goldiamond's paper, J. Dennis Nolan used stimulus-control techniques to help his wife quit smoking. His strategy was designed to bring smoking under the control of cigarettes alone and to eliminate the control exerted by other stimuli, such as watching television or reading. Mrs. Nolan was instructed to smoke as much as she wanted but only while sitting on one particular chair, which was isolated from the rest of the family and out of reach of the television set and

reading material. She kept a record of cigarettes smoked and the amount of time spent in the chair. The procedure helped her to cut down her cigarette consumption appreciably but not completely. One day she declared that she was disgusted with her inability to quit smoking and that she was disappointed with the self-control program. The next day she stopped smoking altogether.

Other scattered reports similar to Nolan's appeared in the literature in the 1960s. But one paper reporting dramatic success with eight obese women appears to have been the most influential in stimulating interest in self-control techniques. Richard B. Stuart, building on the work of the late Charles Ferster and colleagues, schooled his patients in behavioral analysis and techniques for controlling their eating. His highly regarded study, which became the model for countless graduate projects, included six steps in the behavioral curriculum. Patients were instructed to:

- Interrupt meals for a few minutes to gain an early experience in controlling one aspect of eating.
- Remove food from all rooms in the house except the kitchen and to keep there only food that requires preparation. The purpose was to reduce automatic eating.
- Make eating a "pure experience," unadulterated by other activities. As in Goldiamond's case, the purpose was to narrow the range of stimuli controlling eating.
- Put down utensils between bites. This would slow eating.
- During periods of high emotional arousal, when overeating usually occurs, engage in some other behavior, such as calling a friend or taking a walk.

The sixth step, used only with two patients who had difficulty controlling between-meal eating, involved instruction in covert sensitization. With this technique, the patients were trained to relax, then imagine themselves about to indulge in a compulsion, then imagine an unpleasant event. One patient, for example, had difficulty resisting cookies:

> She was first trained in vivid imagery and then instructed to imagine eating her favorite cookie (taking it from the package, bringing it to her lips, hearing her teeth crunch as the cookie crumbles, tasting its sweet-

> ness, etc.), and she was finally instructed to immediately switch to the detailed image of her husband in the process of seducing another woman—a great fear which she had identified during the initial interview. (Stuart 1967, p. 362)

Stuart saw his patients individually for about 30 minutes three times a week for 4 to 5 weeks, intervals of 2 weeks for the next 12 weeks, and monthly thereafter. In addition to the steps outlined above, recordkeeping was required of the patients; they kept "food data sheets," on which they noted the time, nature, quantity, and circumstances of all eating and drinking, and also a record of their weight, taken four times a day.

Over the course of a year, Stuart's patients lost an average of 38 pounds, a figure that remains unmatched in the literature on behavioral control of obesity. The treatment was aimed at "building the skill of the patient in being his own contingency manager," Stuart wrote. "This is a self-control procedure which is reinforced through the patient's experience of success in the control of his own behavior, the reduction of the aversive consequences of a lack of self-control, and through considerable reassurance by the therapist." He suggested that a future study should try to isolate the contribution of the interaction between therapist and patient. But in the hundreds of studies that have been modeled on Stuart's work, that suggestion has been all but ignored.

Another paper published during the same period spurred the development of cognitive self-control techniques. In that paper, Lloyd Homme challenged his fellow psychologists to tackle the problem of controlling private mental events or "coverants." Coverants include "thinking, imagining, ruminating, reflecting, relaxing, daydreaming, fantasying, and so forth." Difficulties in controlling these coverants "undoubtedly underlie a good many behavior or personality disorders," according to Homme.

Homme suggested that behavioral principles could be applied to controlling private events because, first, a person can discriminate among his own thoughts, and second, a person can control rewards and punishments. People who are trying to lose weight, for example, should not allow themselves some high-probability behavior (e.g., drinking a cup of coffee) as a reinforcer unless they had first thought of some of the aversive consequences of overeating. In the case of Stuart's patient, the

aversive consequence was imagining her husband flirting with another woman. Following on the heels of Homme's paper came a large number of reports on the use of "covert conditioning" (e.g., Cautela 1966).

The early applications of learning principles to self-control adhered rather strictly to the operant conditioning model, even when private events were admitted to the roster of treatable behaviors. In the late 1960s and early 1970s, however, behavior therapists began to take a more interactionist view of self-regulatory behavior. The principal theorists behind this trend were Albert Bandura and Frederick Kanfer. Working independently, both Bandura and Kanfer conducted experiments of self-regulatory processes, such as self-reinforcement and self-monitoring. Both espoused a "social learning" theory, which encompassed the principles of classical and operant conditioning and also incorporated findings relevant to behavior change from social and developmental psychology. Thus, according to social learning theory, behavior is learned and maintained not only through association (classical conditioning) and through the rewarding or punishing consequences of behavior (operant conditioning), but is also influenced by such cognitive and social processes as perception, imagery, persuasion, imitation, expectancy, and interpersonal attraction. While acknowledging the crucial role of cognitive processes in behavior change, both Bandura and Kanfer nonetheless remain committed to behavioral, performance-based methods for effecting change.

Behavioral Theories of Self-Control

As in all behavior therapy, the ultimate focus of self-control methods is *behavior*. Like other behavior therapies, self-control procedures are active: They emphasize instituting a program for change rather than reflection. Therapists who use self-control techniques, like other behavior therapists, believe that change results largely from the specific techniques themselves rather than from nonspecific aspects of the treatment process. In their use of continuing assessment throughout the treatment process and their reliance on direct behavioral measures of outcome, self-control therapists also remain committed to the tenets of behavior therapy.

On the theoretical level, however, self-control therapy represents a significant departure. It simply does not fit neatly into the conditioning model that constitutes the theoretical base for the older behavior therapies. Some theorists, notably Kanfer and Bandura, have proposed alternative models to account for the individual's self-regulatory capacity.* In their social learning conceptions, behavior is determined by multiple forces. Operant and classical conditioning play a part, as do internal symbolic processes. Kanfer and Bandura and others of the cognitive-social learning school depart from the strict environmentalism of traditional behaviorism, emphasizing instead the reciprocal influences of the environment and the person. Self-

*As Bandura points out, in social learning theory, self-directed change is referred to as "self-regulation" rather than "self-control." Some forms of self-regulation do not require the restraint implied by the word "control"—e.g., cultivating competencies or enhancing expressiveness. Both Kanfer and Bandura see self-control as a special case of self-regulation.

control is one way the individual can regulate the effects of the environment. Training in self-control is, in part, directed at strengthening the person's ability to control the environment, whereas traditional behavior therapy is directed at manipulating the environment to control the person. The source of control becomes the individual in treatment rather than the therapist. In practice, this shift of control is not always readily apparent.

Cognitive-social learning theory provides one type of interpretation of self-control phenomena. Alternative, operant explanations have also been offered. In fact, the issues surrounding self-control have been the source of heated exchanges between behavior therapists of different persuasions.

Among social learning theorists, many of whom offer slightly differing formulations of behavior, the work of Kanfer and Bandura is most relevant to self-control. The rudiments of their positions will be described in turn. A review of theoretical models can also be found in Thoresen and Mahoney (1974).

KANFER'S SELF-REGULATION MODEL

In his theoretical writings, Kanfer has been concerned with adapting the simple stimulus-response (S-R) model of animal learning to account for the greater complexity of human learning. According to Kanfer, two changes must be made in the S-R model to adapt it to humans. First, one must account for the fact that people are affected by their own behavior, respond to it, evaluate it, and correct it. Second, one must consider the human capacity for selectively attending to environmental stimuli and choosing the most reinforcing environments. Self-reactions can affect other types of behavioral repertoires. For example, a swimmer who tells himself that he's poor at swimming impairs his performance in the water. Past training of motor responses can be completely overridden by such attitudes.

Kanfer assumes that behavior is regulated by three sources of influence—the environment, the self, and biology. All three influences vary in strength at any given moment, and all three interact to produce a given behavior. To illustrate, he cites the example of the hungry, impoverished man in a bakery shop who is attracted by a loaf of fresh bread. Whether the man attempts to steal the bread will depend on the situation (Are

people watching? How close is the bread?), on self-generated cues (It is wrong to steal!), and on biological factors (How hungry is he?). If the loaf is within easy reach and the man is starving, the force of his beliefs about stealing might be overridden.

In the clinic, the behavior therapist must evaluate all three sets of influences. No event, Kanfer emphasizes, is likely to be under the complete control of any one set of variables; the influences, rather, constantly interact to moderate the final behavior. Thus, behavior change programs that rely primarily on external (environmental) controls might only be effective for brief periods of time in highly controlled situations. They can be expected to be less effective when the strength of self or biological influences increases. Training in self-regulation is directed at reducing the effect of temporary fluctuations in environmental and biological variables on the person's behavior.

Throughout much of his professional life, Kanfer has focused on the second set of variables, the self-regulatory processes that influence behavior. He sees self-regulation as a three-stage process involving self-monitoring, self-evaluation, and self-reinforcement. The occasions for self-regulation arise when normal chains of behavior are purposely or inadvertently interrupted, when new behavior is being learned, or when a choice between alternative responses must be made. Kanfer assumes that before self-regulation can occur, a person must have set standards for performance; these standards are established on the basis of past experiences and social norms. Self-control, in Kanfer's formulation, is a special case of self-regulation, present when the behavior to be executed or avoided is marked by conflict.

Kanfer has recently revised his self-regulation model to account for whether the person perceives a situation as being under his or her own control or determined by some external force (Kanfer and Hagerman 1981). In the revised model, Kanfer also distinguishes between long- and short-term standards applied during self-evaluation. Long-term concerns are seen as having incentive value, reflecting greater personal involvement and engendering more emotional arousal—hence, giving more force to self-reinforcement—than do short-term concerns. Kanfer believes that his self-regulation model has

386-848 O - 82 - 5

implications for clinical practice because "it suggests that many intrapersonal clinical problems might be due to deficiencies or faulty application of the self-regulation components." Patient histories often reveal that patients have, for example, set excessively high standards, failed to monitor their own behavior accurately, or inappropriately rewarded or punished themselves.

Like other social learning theorists, Kanfer sees self-control as something one does in a particular situation rather than as an enduring personality trait. In this, he, like others, follows Skinner's distinction between a *controlling response* and a *controlled response*. The dieter, for example, throws out tempting food (the controlling response) in order to avoid eating it (the controlled response).

> The important features of self-control involve the presence of two or more alternatives, the conflicting consequences of the available behaviors, and the initiation of a self-generated controlling response. The controlling response is usually one that has been previously learned by modeling or direct reinforcement. It can be maintained by distant external factors, but it is currently initiated by the individual himself without direct control of the social or physical environment. (Kanfer 1977)

Thus, Kanfer conceives of self-control as a means by which people can free themselves of the push and pull of environmental influences, but only momentarily. Self-controlling responses are themselves influenced by previous learning experiences. Even when they are made, their ultimate success depends on environmental consequences.

According to Kanfer, self-control training can attempt to modify any of the three self-regulatory processes to effect changes across a broad range of responses in many different situations. His own research has focused on self-reinforcement, which, he believes, permits an individual to maintain or alter behavior with little dependence on the immediate environment. Self-reinforcers can be either material (e.g., treating oneself to a good meal after doing a certain amount of work) or verbal-symbolic (e.g., praising oneself for doing the work). For a therapist, training a person to administer self-reinforcers is more difficult than providing rewards directly, but self-reinforcement procedures have "the great advantage that the individual can

eventually apply them independently of the helper, and that he can also use the same procedures for other problems which may not be related to the central complaint."

In laboratory research, Kanfer (along with Bandura and others) has shown that self-reinforcers can both motivate new learning and alter the occurrence of particular responses. Further, positive self-reinforcement has been shown to produce these effects as well as, if not better than, reinforcement by others. Research has also shown, however, that with self-reinforcement a person may be only temporarily independent of the environment, which must supply ultimate positive consequences to maintain the behavior. (Patterns of self-reinforcement and self-criticism can themselves be learned, probably acquired in childhood by direct training and by observing others.)

Recently, Kanfer has turned his attention to the use of self-control techniques to foster altruism. He believes that altruistic behavior involves conflict similar to that encountered in situations that call for self-control. In fact, he defines altruism as "self-control in the service of another." Training in altruism involves helping a person alter the probability of making a preferred, immediately rewarding response in favor of making one that is less rewarding.

BANDURA'S SELF-SYSTEM

Although Kanfer believes that cognitive processes can modify environmental influences, he sees the environment as the ultimate source of control. Bandura, by contrast, gives at least equal weight to cognition and behavior. In his view, the environment exerts its influence through a sort of cognitive filter. In many situations potential environmental influence only becomes actual through a person's cognition or behavior. For example, as Bandura notes, "Lecturers do not influence students unless they attend their classes, books do not affect people unless they select and read them, fires do not burn people unless they touch them, and rewarding and punishing influences remain in abeyance until activated by conditional performances." Cognitive factors determine the perception, meaning, and organization of external events. Other personal factors, such as physical size, sex, and attractiveness, influence reactions from people in the environment. In turn, the person's

self-conceptions and actions are affected in ways that can maintain or alter the reactions in the environment. Thus, in Bandura's social learning theory, behavior, personal factors, and the environment are reciprocally determined. While all three sets of factors work in concert, in any given situation any one set might exert more influence than the other two. But the important point is that the three influences "all operate as interlocking determinants of each other."

Bandura believes that the study of self-regulatory phenomena highlights the differences between his theory of reciprocal determinism and the traditional behaviorist's unidirectional environmental determinism. The radical behaviorist does not acknowledge a role for self-generated influences, while in social learning theory, "self-referent processes occupy a central position."

Bandura's model of self-regulation includes three components: self-observation, performance judgment, and self-reaction. Bandura and his colleagues have devoted a great deal of attention to how people adopt the internal standards they use to judge and guide their own behavior. The researchers have concluded that internal standards are established in three ways: The person is directly taught standards, or learns them by being evaluated by others, or observes the self-evaluative standards that others apply to themselves.

In addition to this concern for the judgmental processes in self-regulation, Bandura has given considerable attention to the third component, self-reactions, particularly self-evaluative responses. He believes that self-reinforcement improves performance because it motivates behavior, not, as operant behaviorists would have it, because it strengthens preceding responses. Self-satisfaction and pride—forms of self-evaluation—can motivate people, as can tangible rewards that are taken only when a given level of performance is achieved. In many situations, both evaluative and tangible consequences regulate behavior. Likewise, anticipating dissatisfaction with inadequate performance increases the likelihood that people will work to perform acceptably. According to Bandura, self-regulated reward occurs when the individual has full control over freely available rewards, sets a standard for evaluating performance, then compares performance to these self-imposed standards, and finally

self-administers rewards only when performance meets or exceeds the standard.

In the last several years, Bandura has conducted a running debate with radical behaviorists who question whether self-reinforcement does, in fact, occur. One line of argument has to do with the use of the term, "self-reinforcement" (see, for example, Catania 1975). Goldiamond (1976*a*) argues that reinforcement cannot be administered to oneself because it is impossible to evaluate one's own performance objectively. The most common argument (e.g., Stuart 1972) is that self-reinforcement reduces to nothing more than external reinforcement because it is itself controlled by external factors. Bandura and other social learning proponents agree that self-reinforcement patterns may be learned through experiences involving external reinforcement, but that at the moment they are used they operate independently. As Bandura contends,

> Searching for the ultimate environmental contingency for activities regulated by self-reward is a regressive exercise that in no way resolves the issue under discussion because, for every ultimate environmental contingency that is invoked, one can find prior actions that created it. Promotion systems for occupational pursuits, grading schemes for academic activities, and reverence of slimness are human creations, not decrees of an autonomous impersonal environment. In the regress of prior causes, for every chicken discovered by a unidirectional environmentalist, a social learning theorist can identify a prior egg. (Bandura 1976, p. 143)

Another aspect of Bandura's theoretical writings relevant to self-control is his theory of self-efficacy (Bandura 1977*b*, 1982). According to that theory, psychological treatments of all types help to create and strengthen a person's expectations of personal effectiveness, that is, the conviction that one can behave in a way that will produce a desired outcome. Bandura is careful to distinguish between efficacy expectations and anticipated outcomes. People can believe that a certain course of action will lead to a certain outcome, but still not believe that *they* are capable of performing that action. One can, for example, believe that eating fewer calories will lead to weight loss, but not believe oneself capable of eating less.

Under Bandura's scheme, both initiating and persisting in coping behavior are affected by beliefs in one's ability to effect

desired changes. People don't even try to cope with a situation they view as too difficult or threatening. Furthermore, once in a situation, expectations of personal mastery will affect how much effort will be expended for how long. "The stronger the perceived self-efficacy, the more active the efforts." Of course, positive beliefs about one's ability to master a situation aren't all that is required for success; appropriate skills and adequate incentives are needed, too. Given these skills and incentives, "efficacy expectations are a major determinant of people's choice of activities, how much effort they will expend, and how long they will sustain effort in dealing with stressful situations."

Development of a sense of self-efficacy has particular relevance to the problem of generalizing treatment effects to problems other than the ones corrected in treatment. Studies done by Bandura and his colleagues (e.g., Bandura et al. 1980) demonstrate that enhanced self-efficacy is associated with improvements in diverse areas of behavioral functioning.

According to Bandura, efficacy expectations can be traced to four sources. The most powerful is actual experience with a successful performance; in this type of situation, the person, in effect, thinks, "I know I can do it because I succeeded in the past." Other sources include vicarious experience ("I know I can do it because I've seen someone else do it."); physiological arousal ("I know I can do it because I'm not afraid."); and verbal persuasion ("I know I can do it because my therapist told me I could.").

These sources of information about one's effectiveness do not invariably produce the same results. Even direct experience with success does not necessarily create strong generalized expectations of personal efficacy if the success is credited to sources other than one's ability. Information about self-efficacy is processed and transformed by the individual, and this cognitive appraisal determines the impact of the information. "Expectations that have served self-protection functions for years are not quickly discarded," Bandura observes. "When experience contradicts firmly established expectations of self-efficacy, they may undergo little change if the conditions of performance are such as to lead one to discount the import of the experience." But since perceived self-efficacy is not a personality trait, corrective experience can enhance it.

Assessment Issues—The Example of Obesity

Behavior therapists pride themselves on their objectivity. When called upon to characterize their field, they invariably assert that their techniques are subjected to the most rigorous possible tests of efficacy. Rather than rely on clinical impressions or their clients' testimonials, they seek objective measures of treatment outcome. Behaviorally oriented researchers such as Gordon Paul, Alan Kazdin, G. Terence Wilson, Michael Hersen, and David Barlow have contributed some of the clearest available expositions on the requirements of sound research on treatment.

The assessment of self-control methods has been partly shaped by the need for objective measures of outcome. The majority of the treatment assessment research reports in the literature on self-control have been concerned with the problem of obesity, a condition that lends itself to easy measurement. The history of research on the behavioral treatment of obesity illustrates the progress of a treatment as it is subjected to increasingly demanding tests of proof. As Wilson (1978*b*) has pointed out, obesity has been a popular subject for evaluation for at least three reasons: First is the easily measured dependent variable. "Instead of the all-too-familiar difficulties inherent in the measurement of other clinical disorders, such as rating anxiety, inferring depression, judging interpersonal adjustment, or estimating alcohol consumption, a quantitative measure is obtained by simply asking the obese client to step on a scale." A second reason is the ready availability of sub-

jects. A third reason is the encouraging outcome of Stuart's 1967 study. In Wilson's words:

> The happy combination of a handy, "hard" index of treatment outcome for large numbers of motivated subjects who can usually be recruited at minimal effort and cost and who provide a made-to-measure testing ground for one of the hottest areas of behavioral modification has proven irresistable to behavioral researchers. (Wilson 1978*b*, p. 688)

Since Stuart's 1967 article demonstrated that behavioral treatment was associated with significant weight losses, more than 200 similar studies have been done. Many contributed little to the development of the field. (See Wilson 1978*b* for a discussion of the reasons for this state of affairs.) But scattered through the literature are a number of studies that, little by little, have begun to pinpoint what constitutes effective treatment for obesity. This body of work illustrates the different research strategies that can be used to answer various questions about the usefulness and effectiveness of a treatment technique. The discussion that follows highlights some of the critical studies on the behavioral treatment of obesity. It is based largely on reviews of the literature done by Stunkard and Mahoney (1976), Leon (1976 and 1979), Bellack (1977), Abramson (1977), Jeffery, Wing, and Stunkard (1978), Wilson (1978*b* and 1980), Stunkard (1979), Stunkard and Brownell (1979), Brownell and Stunkard (1980), and Wilson and Brownell (1980).

RESEARCH STRATEGIES

Kazdin and Wilson (1978*a*) have described the several strategies that investigators use to evaluate psychological and behavioral treatments. Each strategy has its place in the development of an effective treatment since each is designed to answer different questions. As Kazdin and Wilson note, there is a rough logical sequence in which these strategies should be applied, but this natural evolution rarely takes place. During preliminary phases, different treatment components should be tested together or added and varied one component at a time. Once a technique has been demonstrated to be effective, individual components and characteristics of the process can be analyzed. Comparing a new treatment to older established ap-

proaches is best left until late in the development of the new treatment. Such comparative research requires more subjects and therapists and is more expensive to carry out than other strategies. Yet, it is often done before the new treatment has been shown to have an effect. According to Kazdin and Wilson, rushing to do comparative research is tempting because if the technique can be shown to be superior to an existing technique, it is "likely to generate a flurry of enthusiasm in the field more quickly than the treatment package evaluation strategy would."

Research on the behavioral treatment of obesity did start with a treatment package approach, as Kazdin and Wilson recommend. From there, however, its evolution has not been orderly.

Treatment Package Strategy

This is the "kitchen sink" approach, one in which investigators combine into one "package" every method that might possibly help to remedy a problem. It is designed to answer the questions, "Does the treatment make a difference? Does it result in improvement?" Control groups receive no treatment or some form of placebo treatment, such as attention from the therapist comparable to that received by the treatment group.

The treatment package for obesity usually includes nutritional counseling, self-monitoring, stimulus control, altering eating style (behavioral management), and manipulating the consequences of eating (rewards and punishments). One early study using this strategy and these package components was done by Mary B. Harris (1969), whose program also included aversive conditioning for one group of subjects. Control subjects were given no treatment but were asked to try to lose weight on their own. During the 2-month-long study, the experimental subjects lost significantly more weight than did the controls. (Aversive conditioning did not result in additional losses.)

An early study by Janet Wollersheim (1970) compared a program that included self-monitoring, stimulus control, self-reward, and other behavioral strategies to three control conditions: one for the effects of time, seasons, and concurrent life experiences (a no-treatment group); one for such nonspecific effects of treatment as attention, faith, expectation of relief, and the treatment ritual; and a third group to control for the

positive expectations and social pressure from other dieters (such as one might receive from diet clubs). After 12 weeks of treatment and after a further 8-week followup period, subjects who had received behavior therapy had lost significantly more weight than those in the control groups and also reported greater reductions in inappropriate eating behavior. One notable feature of this study was its extremely low attrition rate (less than 4 percent overall). As Wollersheim points out, the study's major limitation was its brevity, considering that the subjects were very obese; even significant losses left them overweight at the end of the study. This problem is shared by the majority of studies done on the behavioral treatment of obesity.

On the basis of studies such as those done by Harris and Wollersheim, it soon became clear that the behavioral treatment package was effective in producing weight losses. Researchers quickly turned their attention to comparing the behavioral package with traditional medical and psychiatric treatments for obesity.

Comparative Treatment Strategy

The comparative treatment strategy is, as Kazdin and Wilson note, designed to answer the question, "Whose treatment is better?" Wilson (1978*b*) calls attention to a common deficiency of such studies—the alternative treatment (often psychotherapy) is not adequately represented and therefore this condition should be considered an attention-placebo control group (similar to Wollersheim's). "Drawing conclusions about the superiority of behavioral methods over traditional psychotherapy on the basis of these studies is inappropriate," Wilson says.

One study that *did* adequately represent "traditional" therapy for obesity and compare it to behavioral methods was done by Sydnor B. Penick and his colleagues, Ross Filion, Sonja Fox, and Albert Stunkard (1971). While Wollersheim's study controlled for the subjects' expectations, it did not control for the therapists'. The Penick study was designed to do just that. Certain that they could not eliminate bias, Penick's group deliberately designed the study to favor the alternative. Subjects who received behavioral treatment were trained by inexperienced therapists, while those who received the alternative treatment, consisting of supportive psychotherapy plus diet and nutrition information, were treated by expert therapists. Both

therapist teams believed that their treatment was superior to the other. Despite its structural handicap, behavior therapy produced the greater weight losses. As in subsequent studies, however, there was great variability in the response of the behavior therapy subjects.

The many comparative treatment studies within the past decade have consistently shown behavior therapy to be superior to alternative nonsurgical treatments in producing short-term weight losses. In programs averaging about 10 to 12 weeks, mean weight losses have been in the range of 10 to 12 pounds.

Compared to traditional treatments for obesity, in which attrition runs from 50 to 80 percent, the dropout rate for behavior treatments is about 13 percent. As Kelly Brownell says, "Attrition may be the most important adherence issue facing obesity researchers today, so the low attrition rates from behavioral programs are noteworthy." Even in behavioral studies, attrition rates range widely—from 0 to 26 percent in studies surveyed by Wilson and Brownell. (Wilson and Brownell suggest that the use of a money deposit-refund contingency may be responsible for the low attrition in some studies. Hagen (1976) tested this notion empirically and found that a large deposit resulted in significantly lower attrition.)

Dismantling Treatment Strategy

Encouraged by the early successes of the self-control treatment package, investigators soon turned their attention to the question, "Which component of the package is responsible for improvement?" To answer this question, they systematically dismantled the package, component by component, noting whether the treatment effect was thereby diminished. Some studies of obesity have followed this formal dismantling strategy, while others have compared two or more components as if they were alternative treatments. Following what they call a "sequential dismantling strategy," Raymond Romanczyk and his co-workers (1973) compared six treatment groups and a no-treatment control group over a 4-week period. Members of one group were asked to monitor their weight; those in the second monitored weight and caloric intake. Each successive group did what the last group did, but with one more treatment component added. Thus, those in the third group monitored weight and calories and also took part in "symbolic aversion" (aversive

conditioning). To these conditions was added relaxation training for the fourth group. The fifth received all that the fourth received, plus instructions in stimulus control and behavioral management of the act of eating. The sixth group was identical to the fifth, except that money deposits were returned contingent on weight lost. Results showed that the no-treatment control and the self-monitoring-for-weight groups lost significantly less weight than the other groups. Self-monitoring for caloric intake produced losses as great as those produced by the addition of the other treatment components. However, the group that received contingent rewards for weight loss experienced no attrition, while the other groups did.

Another attempt to isolate the effective components of the behavioral treatment package was that of Michael Mahoney and his colleagues (1973). They compared five groups over a 4-week period; the first monitored weight and eating behavior and rewarded themselves for desired changes; the second monitored as the first did and also fined themselves (self-punishment) for lack of weight loss and poor eating behavior; the third group combined the techniques of the first two; the fourth only self-monitored; and the fifth received information booklets describing stimulus control only. Results showed that all groups that self-rewarded lost significantly more weight than those that did not. Self-monitoring alone did not produce significant losses.

The results of studies such as those of the Romanczyk and Mahoney groups have yielded equivocal results. As evaluated by several reviewers, the effectiveness of the four major components of behavioral self-control packages appears to be as follows:

- *Self-monitoring* of caloric intake is reactive—that is, it produces a change in the behavior monitored, at least in the short run. As Bellack (1977) points out, the self-evaluative and self-reinforcing operations that follow self-monitoring presumably are responsible for this reactive effect. In a 1974 study, he and his associates found that monitoring calories before food is actually eaten is more effective than recording calories after they are eaten. Reviewers agree that self-monitoring is an effective weight-loss strategy, but should be supplemented by other techniques.

- *Stimulus control*, despite its wide use, has not been demonstrated effective when used apart from the rest of the behavioral package. Two studies that have tested this component alone (Loro et al. 1979; McReynolds et al. 1976) produced conflicting results, perhaps because of differences in the subject populations. Reviewers recommend, however, that stimulus-control procedures be a component of the treatment package.
- *Altering eating style*, when studied, has also produced mixed results. For example, in one study (Rosenthal and Marx 1978), subjects who lost weight had changed their eating habits (such as eating more slowly than before), but so had those who did not lose weight.
- *Reinforcement*, either externally or self-administered, has been delivered for both habit change and weight loss. Therapist-administered reinforcement (usually consisting of money paid for weight loss from a fund deposited by the client before treatment started) has produced short-term weight losses. However, many investigators are leery of using external reinforcement for weight loss, because clients sometimes use extreme means (e.g., diuretics or laxatives) to meet preset weight-loss goals. Self-reinforcement is considered more promising, partly because it can be used by the client after treatment is terminated. Mahoney's group found that reinforcing habit change was more effective than reinforcing weight loss. Leon (1979) reports that she has dropped self-reward from her programs for adults because many clients had indicated that weight loss was reward enough, and the "notion of earning points or material rewards along the way seemed rather childish." Most reviewers are more positive in their evaluation of self-reinforcement, and most recommend that it be included in weight-loss programs.

Constructive Treatment Strategy

This approach is designed to answer the question, in Kazdin and Wilson's words, "What can be added to this treatment to make it more effective?" To enhance the effects of the "standard" treatment package for obesity, investigators have tried adding such components as relaxation, aversive conditioning, or appetite-suppressant drugs. For example, in a study that also

constituted a comparative research strategy, Linda Craighead and colleagues (1981) tested the effects of adding an appetite suppressant (fenfluramine) to the standard behavior therapy program. Experimental subjects received either behavior therapy alone, pharmacotherapy alone, behavior therapy and pharmacotherapy combined, or traditional physician's office medical treatment alone (medication, diet and exercise information, advice, and encouragement). A control group received no help while on a waiting list to receive treatment. All four treatment groups lost significantly more weight than the controls did. At the end of the 6-month treatment period, the two groups that had received medication lost significantly more weight than the groups that had received behavior therapy alone or traditional treatment. After a year, however, the behavior therapy patients regained far less weight than did the patients who had received drugs. To the investigators, this finding indicates that subjects who received behavior therapy alone may have increased their sense of personal effectiveness (Bandura's "self-efficacy"), which strengthened their subsequent efforts to control their weight. They further speculate that adding medication to behavior therapy may have led subjects to attribute their losses to the drug rather than to their own efforts; alternatively, the subjects may not have learned or practiced the behavioral techniques, relying instead on the hunger-suppressing drugs; or yet another possibility, they may have been subjected to "state-dependent learning," learning which is forgotten when in states other than the one in which it took place (in this case, while under the influence of the drug).

Adding social support to usual behavior techniques is another type of constructive treatment strategy used by several investigators. Kelly Brownell and his colleagues (1978), for example, trained the spouses of dieters in the same behavioral strategies as those used by the dieters themselves and instructed the spouses to set a good example. Brownell's group found that, compared to subjects treated without their spouses, dieters whose spouses received training lost more weight and maintained the loss better. Other attempts to involve family members in weight-loss programs have met with equivocal results. Brownell (in press) speculates that the nature of the marital relationship and the role obesity plays in it may affect treatment benefits.

Parametric Treatment Strategy

This approach is similar to the constructive strategy because it attempts to improve the effectiveness of a treatment. Unlike the constructive strategy, in which qualitatively distinct components are added, in the parametric strategy existing techniques are varied, often quantitatively. One example of such an approach is a study by Walter Ashby and G. Terence Wilson (1977) that tested different weight-maintenance conditions following weight loss. Five groups were compared: one met every 2 weeks in a continued structured behavioral program (a review of techniques learned during treatment); a second group received identical booster sessions every 4 weeks; a third group met every 2 weeks for booster sessions that were not made up of formal reviews of techniques; a fourth group met every 4 weeks under the same conditions as the third; and a fifth group had no further contact after treatment except for weigh-ins. These meetings continued at the specified intervals for 4 months; during the second 4 months the groups began gradually to meet less frequently (the 2-week groups, for example, met in 3 weeks, then 4, etc.); no meetings were held in the final 4-month period. The results showed no significant effects of booster sessions. Neither the different content nor the frequency of sessions made a difference.

Client/Therapist Variation Strategy

This strategy is used to determine whether treatment is more effective for certain kinds of clients or when conducted by certain types of therapists. One such study was conducted by Ronald Rozensky and Alan Bellack (1976), who divided subjects according to their tendency to reinforce themselves. The "high self-reinforcers" lost substantial amounts of weight using self-control methods but did worse than control subjects when external reinforcement was added to the self-control program. The investigators suggest that external reinforcement, which seemed to irk the high self-reinforcers, distracted their attention from the other more effective treatment components. Low self-reinforcers did moderately well in both conditions. Although the self-control program was effective for both high and low self-reinforcers, the "high" group lost almost one-half a pound a week more.

Single-Subject Designs

Experimental designs using only one individual are well suited to testing treatment techniques that produce highly variable results, such as the behavioral treatment of obesity. According to Kazdin and Wilson, single-subject experiments allow the investigator to "look at the effects of a treatment 'package,' analyze components of an effective treatment, construct an effective treatment by combining different components, and compare different treatments." Little use of single-subject designs has been made in obesity research; Wilson (1978*b*) did, however, find two examples in the literature. The first, a 1972 study by Ronald Mann, examined the effectiveness of contingency contracting. In this method, subjects surrendered money or personal items which were used as rewards for losing agreed-upon amounts of weight at a given rate. After a baseline period, the contingencies were in effect for at least 4 weeks, withheld for 2 to 4 weeks, then again instituted. This pattern is the so-called reversal or ABAB design. The results showed that contingency contracting did result in weight loss. Most subjects gained weight or remained stable during baseline, lost weight while being treated, then again gained or remained stable during the reversal condition.

An alternative single-subject design was used by Kenneth Morganstern (1974) in an experiment with one obese woman. He tested the effectiveness of smoking as an aversive stimulus when associated with eating fattening food. Using an additive multiple baseline design, Morganstern first had the client smoke when she was eating candy, then later added cookies and doughnuts. He found that her consumption of candy, but not of cookies and doughnuts, went down while candy was the target. Later cookie and doughnut consumption went down when they became the targets.

Although studies such as Mann's and Morganstern's systematically test the effectiveness of a treatment technique, their results cannot be generalized to other clients and they provide no information on effectiveness compared to other techniques. As Wilson points out, reversal designs such as Mann used, by definition, make it impossible to judge whether treatment effects are maintained—an important issue in the treatment of obesity. Multiple-baseline designs are difficult to interpret if

the treatment effect generalizes; in the Morganstern study the client's aversion to candy might, for example, have generalized to other sweets, but the treatment effect would have been unclear from the study's results. Despite these drawbacks, Wilson sees single-subject research strategies as useful in studying behavioral treatments of obesity. Stable baseline data on weight are usually sufficient and easily discriminated from later treatment effects, and standard weight charts make it possible to judge whether losses are clinically significant—the kind of normative reference point so sorely lacking in treatment of most psychological disorders.

Uncontrolled Studies

Many articles on treatment outcome report the results of uncontrolled treatment programs. In the absence of a no-treatment control group, one cannot conclude from a study's results alone that observed weight losses did not result from the passage of time or other factors extraneous to treatment. Wilson (1978*b*), however, argues that, since many studies have proven that weight does not change significantly without treatment, no-treatment control groups are no longer necessary in research on the behavioral control of obesity. But "nonspecific" control groups—those that control for the effects of just being in a treatment program—are necessary before one can conclude that a particular technique was responsible for weight loss.

Nevertheless, there is much to be learned from uncontrolled research, according to Wilson and Brownell (1980). First, uncontrolled clinical programs often reflect real-world situations more accurately than controlled programs do; it is not always possible to generalize from the results of controlled studies. Second, Wilson and Brownell recommend that the results of uncontrolled studies be compared to controlled ones. "Clinical endeavors are customarily conducted by experienced professionals with considerable expertise under representative service delivery conditions. Some clinical programs have been tailored to the specific needs of individuals, a flexibility that is usually missing from the published controlled research." Since this flexibility means that clinical conditions are optimum, failure to find significant weight loss would indicate the technique is probably not effective. Another reason to pay attention to un-

controlled studies is that they often provide testable hypotheses for controlled research.

One as-yet-unpublished uncontrolled study that has produced positive results was done by Judith Rodin. Wilson and Brownell describe this program:

> Rodin's program is a sophisticated, multifaceted, cognitive-behavioral approach that is firmly based on up-to-date clinical and experimental findings. Nonetheless, the program does not appear to be sufficiently different from similar programs to account for the unusually positive results (Wilson and Brownell 1980, p. 66).

In the Rodin study, the 164 subjects not only lost a significant amount of weight during treatment—24.4 pounds or 41 percent of excess weight—but also continued to lose after treatment; they had lost an average of 26.6 pounds at the 12-month followup and 30.1 pounds after 24 months.

THE STATUS OF BEHAVIORAL TREATMENT OF OBESITY

The studies cited above are but a few of the many that have attempted to determine the efficacy of self-control techniques in treating obesity. Reviews of the entire literature (e.g., by Wilson and Brownell 1980) have resulted in the following conclusions:

- Behavioral methods are superior to alternative methods in producing weight losses that endure for about a year in mildly to moderately obese clients.
- The losses are modest—averaging about 11 pounds—although the typical client needs to lose considerably more.
- The amount of weight lost during treatment varies markedly from client to client.
- Weight loss cannot be predicted by any of a number of personality, demographic, and behavioral variables that have been tested.
- The dropout rate from behavior therapy is low (about 12 percent) compared to traditional approaches (which average 50 to 80 percent).
- Negative side effects have generally not been noted in clients treated by behavioral methods. By contrast, anxiety, irritability, and depression often accompany the traditional

treatment of obesity—e.g., dieting only. In fact, emotional response has improved as weight has been lost by behavioral methods.

- Weight loss during behavioral treatment does not necessarily result from prescribed changes in eating behavior.
- Weight loss is maintained for a year following treatment, but no further weight is lost; after a year, weight tends to be regained.
- It is unclear whether weight loss achieved by behavioral methods is maintained better than losses through alternative approaches because long-term followups have not been done with the alternative methods.

Several investigators have questioned the assumptions that form the rationale for the behavioral treatment of obesity. Michael Mahoney, for example, has pointed out in several articles (e.g., 1975 and 1976) that the following assumptions often go unexamined in the literature:

- Obesity is a learning disorder.
- The obese overeat.
- The obese differ in eating style from the nonobese.
- Altering their eating style will lead to weight loss in the obese.
- The obese are "stimulus bound"—that is, are unusually influenced by external stimuli that relate to food.

Mahoney contends that each of these assumptions is at least subject to qualification. For example, while obesity may be partly the product of poor eating habits, corrective training may prove unsuccessful because of biological constraints. Differences in body frame, metabolic rate, and age of onset are just some of the factors that influence rate of weight loss.

That changes in eating style result in weight loss has often been inferred from successful outcome data, but, according to Mahoney, this notion has not been adequately tested. As he notes, "Individuals who are more successful are *presumed* to have followed therapist directions more conscientiously." Similarly, stimulus-control techniques have been based on the assumption that the obese are more responsive to external cues.

Yet recent evidence suggests that the obese and nonobese do not differ in "externality."

Like Mahoney, Jeffery and his colleagues (1978) question whether habit changes are responsible for weight lost in behavioral programs. They found that their subjects markedly improved eating behavior between the first and fifth weeks of treatment, but there was no correlation between these changes and weight loss. As Jeffery, Wing, and Stunkard point out, behavioral programs are built on the premise that clients gradually accumulate self-control skills during treatment. Thus, weight losses should accelerate as skills accrue. Instead, weight is typically lost faster at the beginning of treatment than it is later.

Susan Wooley and her colleagues (1979) encourage behavior therapists to pay attention to the findings of basic research on obesity. They speculate that metabolic changes resulting from caloric restriction may be responsible for the fact that behavioral treatments have produced only small permanent losses. Some patients, in addition, may be hungry much of the time for physiological reasons. Such patients may be the ones who do not respond to behavioral treatments. "The inevitability of treatment failure in many instances must be faced, and efforts made to prevent further worsening of the obese patient's self-esteem," Wooley and her associates caution.

Stunkard (1979), in summarizing the results of behavioral studies, says that he believes current behavioral techniques may have reached their limits of effectiveness. "To go beyond these limits may require new technologies or new combinations of technologies." Stunkard points out that efforts are now being made to combine behavior therapy with modified fasting and with appetite-suppressant drugs. Another innovation is the use of couples training—enlisting the cooperation of the spouse—as part of the behavioral treatment program (e.g., Brownell et al. 1978). Maintenance strategies based on a model for preventing relapse in alcoholics are also showing promise (see Marlatt and Gordon 1980; Cummings et al. 1980).

Stunkard suggests that the major contribution of behavioral methods to improving health may be in their applicability to large groups. Behavioral methods have been introduced as an addition to the Weight Watchers program, which previously had relied solely on group pressure, nutrition education, and

lectures. Although applied by lay leaders, the behavioral methods now reach some 400,000 people every week. Controlled studies of these programs are needed because, in Stunkard's words, "They represent one of the first approaches to the control of obesity which is sufficiently far-reaching to warrant description as a public health measure."

Other Behavioral Problems and Disorders

SMOKING

Self-control techniques have been part of larger multicomponent treatment packages used to help people stop smoking. In most programs, smokers are asked to monitor the number of cigarettes they smoke as well as the time and circumstances of smoking. Used alone, self-monitoring has produced only temporary treatment effects. It has often been combined with stimulus-control techniques, which make the smokers aware of specific environmental and internal cues that elicit smoking. Then subjects are taught to break the link between these cues and smoking. This is done, for example, by gradually eliminating smoking from an increasing number of situations or by setting fixed times for smoking (thus making the time interval the only controlling cue). These techniques have helped smokers reduce their cigarette consumption, but not below 10 or 12 cigarettes a day. Lichtenstein and Brown (1980) have suggested that at that level, each cigarette becomes especially rewarding and difficult to give up.

In addition to self-monitoring and stimulus control, self-reward and self-punishment have been used in the treatment of smoking. Rewards are given for meeting some goal, such as resisting an urge to smoke or achieving a day of abstinence. Punishments that have been used have ranged from tearing up a dollar bill for every cigarette smoked to giving oneself an electric shock for smoking. Neither self-reward nor self-punishment has been investigated in controlled studies. Cognitive ap-

proaches directed at strengthening thoughts that are incompatible with smoking have also been tried, but with only minimal success.

In general, studies have shown that self-management techniques are "at best only temporarily superior to control conditions" (Smoking and Health 1979). The common result in these studies is a temporary reduction in smoking but rapid relapse and unimpressive long-term abstinence rates. Further, according to Lichtenstein and Brown, "Clients appear to find the procedures burdensome and often terminate prematurely."

ALCOHOL ABUSE

Self-control training for problem drinkers, often as part of a larger behavioral treatment package, has been tried but has not been well evaluated for efficacy. The approach typically involves self-monitoring of drinking and an analysis of the psychological, social, and environmental stimuli that lead to drinking. Various techniques, such as stimulus control, are used to break these associations; some programs attempt to change attitudes toward drinking and teach skills that can substitute for drinking. Self-reinforcement has also been used, along with strategies such as setting goals for the maximum amount of alcohol to be consumed or providing training in controlling the rate of drinking.

William Miller (1980), reviewing the results of his own outcome studies of a self-control treatment package as well as the work of others, concludes that self-control training for alcohol abusers is a promising but unproven approach. Remarkably consistent improvement rates of 60 to 80 percent have been found across such diverse locations as Pennsylvania, Oregon, Australia, California, New Mexico, and Vancouver, B.C. Patient populations have varied widely in socioeconomic status and have included middle-class self-referrals, patients in State hospitals, and court referrals (Miller 1980, p. 67). Miller cautions, however, that none of the studies he reviewed included a randomly assigned no-treatment control group. Thus, it cannot be shown that the self-control techniques were responsible for the improvements.

Miller sees self-control strategies as especially promising for preventing, as well as treating, problem drinking. The techniques can be adapted to various educational formats and self-

help programs "and therefore may be made available to persons at earlier stages in the development of problem drinking without the requirement of labeling or seeking 'treatment.'"

DEPRESSION

Self-control concepts have been incorporated into a number of behavioral models for treating psychological depression, and scattered case reports using self-control techniques have appeared in the literature. Group comparisons have also been reported (e.g., Hilford 1975).

The most fully elaborated self-control program for depression has been proposed and tested by Lynn P. Rehm and his associates. Depressed people have several problems in self-control, according to Rehm's model (Rehm 1977): They pay more attention to negative than positive events and are more likely to notice immediate rather than delayed consequences of their behavior. When evaluating their behavior, they tend to apply stringent criteria and attribute responsibility for their successes to outside forces while blaming themselves for their failures. Depressives, moreover, reward themselves too little and punish themselves too much.

Rehm's treatment approach is directed at correcting these problems. Depressed women who have taken part in his experimental treatment programs have been taught to monitor their activities and thoughts, set realistic goals, attribute successes and failures accurately, and self-reinforce positive activities. An initial study showed the self-control program to be more effective than a nonspecific-therapy condition and a waiting-list-control condition (Fuchs and Rehm 1977). In a second study, the self-control program reduced depression better than a behavioral assertion training program did. Subsequently, Rehm's group dismantled the self-control program to test individual components. They found that self-monitoring was just as effective in reducing depression when used without the self-evaluative or self-reinforcing components of the program. Rehm and his colleagues believe that one explanation for this finding is that self-evaluation and self-reinforcement are implicit in self-monitoring—that is, "monitoring positive activities implies setting realistic criteria and self-rewarding when they occur" (Rehm and Kaslow in press). Bandura concurs. "It is difficult to monitor one's progress without adopting goals of progressive

improvement and reacting self-evaluatively to one's behavior," he notes. "When people attend closely to behavior they wish to change, they are inclined to set goals of progressive improvement for themselves even though not encouraged to do so. Such personal goal-setting enlists evaluative self-reactions that serve to mobilize efforts toward goal attainment." (Bandura, personal communication.)

Another treatment approach that incorporates elements of self-control training is that developed by Peter Lewinsohn and his colleagues. Lewinsohn assumes that:

> . . . the low rate of behavioral output and the associated dysphoric feelings are elicited by a low rate of positive reinforcement and/or a high rate of aversive experience; that is, it is assumed that the behavior of depressed persons does not lead to positive reinforcement to a degree sufficient to maintain their behavior. Hence, depressed persons find it difficult to initiate or to maintain their behavior, and they become increasingly passive. (Lewinsohn and Arconad 1981)

The strategy Lewinsohn's group has developed for treating depression incorporates a number of techniques, including training in assertiveness, self-monitoring, relaxation, stress management, and contingency management (altering the consequences of behavior). Increasing the patient's activities and social interactions is typically the goal of treatment; hence, the treatment is often referred to as the "pleasant-activities" approach.

Reviews of studies that have attempted to evaluate this approach have generally been negative. Blaney (1981), for example, found only one major study (Turner et al. 1979) supporting it. Curiously, "activities-increase seemed in some studies to be effective with depression even when it did not influence measured activity level." Blaney concludes that despite the methodological deficiencies of most studies of the Lewinsohn treatment package, "the burden of proof must rest heavily with advocates of the pleasant-activities model at this time."

Lewinsohn and his colleagues have recently been testing a self-control form of their treatment package, using as a training tool a book for laymen, *Control Your Depression* (Lewinsohn et al. 1978). So far, that research has produced promising results. It has shown, for example, that a psychoeducational approach to treating depression produced more improvements

than a waiting-list control condition. These results fan the hope that, at least for some kinds of depression, instruction in self-control strategies may be beneficial.

INSOMNIA

Stimulus-control strategies to help people fall asleep have been developed by Richard Bootzin and his colleagues (e.g., Bootzin and Nicassio 1978). The techniques attempt to separate the cues for falling asleep from those for other activities. Clients are instructed to:

- Wait until sleepy before lying down.
- Use the bed only for sleep (and sexual activities).
- If in bed 10 minutes without falling asleep, get up and go into another room; stay up as long as it takes to get sleepy.
- Repeat the preceding step as often as necessary.
- Set the alarm and get up at the same time every morning, regardless of the hours slept (this helps the body acquire a consistent sleep rhythm).
- Avoid napping during the day.

Bootzin's group has used these techniques with chronic, severe insomniacs and has compared them with progressive relaxation, self-relaxation, and no-treatment controls. Subjects who used the stimulus-control techniques, by their own report, were able to fall asleep significantly faster than those using the other techniques. However, the techniques have not yet been established in further research.

In a program that uses more objective measures of sleep, Carl Thoresen and his colleagues employ a variety of behavioral techniques to treat severe insomniacs with difficult problems such as repeated nighttime awakenings and dependence on sleep-inducing drugs. Thoresen hypothesizes that insomniacs whose sleep difficulties are not physiologically based are often the victims of chronic stress. Daytime behavior sets the stage for nighttime sleep disturbances. Thus, much of the emphasis in his program is on helping people learn to manage stress. He and his associates also use the stimulus-control techniques developed by Bootzin, as well as various cognitive strategies, progressive relaxation, and adjunctive treatments for depression.

Published reports of the Thoresen program have so far been controlled case studies (e.g., Thoresen et al. 1981). Group studies with promising results are in press (Kirmil-Gray et al. in press *a*,*b*, Bracke et al. in press).

Self-control techniques appear to have found a place as part of larger behavioral treatment packages for insomnia, although they require further investigation. In the future, their use may be extended to such apparently physiologically based disorders as narcolepsy and nocturnal myoclonus (chronic leg jerking) as well as nocturnal bruxism (teeth grinding).

Summary

Articles on behavioral self-control, a domain within the province of behavior therapy, have been scattered through the psychological journals for nearly two decades. This report, emphasizing exemplary studies, has traced the theoretical foundations of self-control techniques and has highlighted the treatment of obesity, by far their most extensively evaluated application.

Collectively, the literature on behavioral self-control is full of theoretical gumption and clinical hum-drum. The theories of Bandura and Kanfer, as well as the expositions on self-control by Goldfried and Merbaum, and Thoresen and Mahoney, confront what was at one time, for behaviorally oriented psychologists, all-but-taboo subject matter. They embrace the complexity of human experience and offer felicitous models to account for self-control. Much of the clinical literature, on the other hand, reports what sound like repetitious, mechanistic applications of once-imaginative treatment techniques. There are, of course, exceptions, and the clinical articles cited here are among them.

The theoretical models of Kanfer and Bandura grew out of their dissatisfaction with the behaviorist preoccupation with environmental determinism. Both wished to account for the uniquely human capacity to mediate environmental influences through such faculties as perception, imagination, thought, anticipation, and imitation. Working independently, both explored the expression of such capacities in self-regulatory processes. Both espoused "social-learning" theories that modified the behaviorist model to incorporate the reciprocal influence of the person and his environment. Out of their separate inquiries

have come models of self-regulation that are remarkably similar, since both see it as a three-stage process involving self-monitoring, self-evaluation, and self-reinforcement.

Clinical self-control techniques are directed at modifying this process at all three stages. Clients are asked to monitor their problematic behavior and the thoughts and feelings accompanying it. Self-evaluation becomes a conscious step in most self-control treatment strategies; modifying it often involves changing punitively harsh personal standards of clients. Self-reinforcement through tangible or symbolic means is encouraged as a way of motivating and strengthening desired behavior. Even techniques that come straight out of older operant-conditioning paradigms, such as altering environmental stimuli associated with unwanted behavior, take on a different cast when it is the client—the "self"—who does the manipulating.

Behavior therapists began using self-control approaches to meet three separate problems. First, they were trying to confront the issue of control. Because behavior therapists explicitly claim that behavioral control is the goal of treatment, they have often been accused of trying to deprive their clients of freedom. By shifting "control" to the client, they could help dispel this popular misconception. Second, behavior therapists often deal with private behavior—habits, sexual problems, destructive ruminations, among them. They needed—and developed—strategies that could address these problems. Third, maintaining and generalizing change begun during treatment is a continuing concern in all types of therapy. By explicitly placing the responsibility in the client's court from the beginning of treatment, and by emphasizing the development of self-regulatory skills, they try to increase the endurance and foster the generalization of therapeutic gains.

The effectiveness of self-control techniques has been evaluated in a great many studies. Many of the obesity studies pitted total treatment packages—usually including nutritional counseling, self-monitoring, altering eating style, stimulus control, and self-reinforcement—against control groups that received either no treatment or some "traditional" obesity treatment. Time and again, the behavioral packages have been found superior to alternative treatments. But that doesn't mean they are very effective. Losses have averaged 10 to 12 pounds in clients who needed to lose much more.

Compared to most forms of treatment—psychological or physical—assessment of the behavioral treatment of obesity has been quite thorough. When different components of the treatment package were evaluated in dismantling studies, self-reinforcement emerged as promising. Self-monitoring of caloric intake resulted in eating fewer calories, but only temporarily, and stimulus control and altering eating styles produced equivocal results. Investigators have tried to add other components such as appetite-suppressant drugs and social support to the basic treatment package. For example, in one study, the drugs used together with behavior therapy were more effective in the short run, but after a year those who received behavior therapy alone had regained far less weight than those who received the combined treatment. Support of family members as a component in obesity treatment programs has produced equivocal findings to date.

One consistent finding of most obesity studies is that clients vary considerably in the amount of weight lost during treatment; so far, attempts to isolate client variables associated with success have failed. Also troublesome are the failures to demonstrate that weight loss is maintained after a year or more and that the habit changes presumed to result from self-control strategies are associated with weight loss. On the other hand, negative side effects (e.g., anxiety, irritability, and depression) often found in traditional obesity programs have been absent in behavioral programs. Also, attrition rates have been low in behavioral programs, cut substantially from traditional treatment approaches.

Although obesity has received the lion's share of attention in the clinical literature, other disorders have also been treated with self-control techniques. As noted in this report, smoking, alcohol abuse, depression, and insomnia have all been evaluated, with mixed results. Nevertheless, with the exception of smoking, self-control techniques are seen as promising—at least in some forms of these disorders.

A great many other clinical and classroom problems have also been treated with multi-faceted treatment and education programs that are based on self-regulation theories and include self-control techniques. As Kanfer notes, "Issues of self-management and self-control tend to occur in almost all situations in which behavior changes cannot be (or for ethical and various

other reasons are not) kept under strict environmental control." At the very least, most treatments include a transitional phase during which responsibility is shifted from the therapist to the client. "In all these situations," says Kanfer, "the client's adherence or compliance to the program is a major issue." Often the client is asked not only to accept therapeutic goals but also to use newly learned techniques and skills to initiate and maintain what may be a cumbersome or unpleasant change in lifestyle and thinking patterns. Kanfer, like others in the field, views self-control strategies as integral to all change efforts rather than as a clinical method to be used alone for a specific set of problems.

Perhaps the greatest benefit of behavioral self-control will not be found in the effectiveness of a particular set of techniques but in the reorientation it provides. By emphasizing the self, it serves as an arena where practitioners of behavior therapy and the traditional psychotherapies can meet. Outside of the therapeutic setting, it offers a perspective on self-control as a *learned* set of skills rather than as an enduring personality trait. This new way of thinking about self-control may serve as a corrective to our judgments of ourselves and others.

References

Abramson, E.E. Behavioral approaches to weight control: An updated review. *Behaviour Research and Therapy*, 15:355-363, 1977.

Adams, N.; Ferguson, J.; Stunkard, A.J.; and Agras, S. The eating behavior of obese and nonobese women. *Behaviour Research and Therapy*, 16:225-232, 1978.

Ainslie, G. Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychological Bulletin*, 82:463-496, 1975.

Ashby, W.A., and Wilson, G.T. Behavior therapy for obesity: Booster sessions and long-term maintenance of weight loss. *Behaviour Research and Therapy*, 15:451-464, 1977.

Avia, M.D., and Kanfer, F.H. Coping with aversive stimulation: The effects of training in a self-management context. *Cognitive Therapy and Research*, 4:73-81, 1980.

Azrin, N.H. A strategy for applied research: Learning based but outcome oriented. *American Psychologist*, 32:140-149, 1977.

Azrin, N. Toward a solution: A critique. *Journal of Applied Behavior Analysis*, 11:175, 1978.

Bandura, A. *Principles of Behavior Modification*. New York: Holt, Rinehart & Winston, 1969.

Bandura, A. Effecting change through participant modeling. In: Krumboltz, J.D., and Thoresen, C.E., eds. *Counseling Methods*. New York: Holt, Rinehart & Winston, 1976.

Bandura, A. *Social Learning Theory*. Englewood Cliffs, N.J.: Prentice-Hall, 1977*a*.

Bandura, A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84:191-215, 1977*b*.

Bandura, A. On paradigms and recycled ideologies. *Cognitive Therapy and Research*, 2:79-103, 1978.

Bandura, A. The self system in reciprocal determinism. *American Psychologist*, 33:344-358, 1978.

Bandura, A. Self-referent mechanisms in social learning theory. *American Psychologist*, 34:439-441, 1979.

Bandura, A. In search of pure unidirectional determinants. *Behavior Therapy*, 12:30-40, 1981.

Bandura, A. Self-efficacy mechanism in human agency. *American Psychologist*, 37:122-147, 1982.

Bandura, A., and Perloff, B. Relative efficacy of self-monitored and externally imposed reinforcement systems. *Journal of Personality and Social Psychology*, 7:111-116, 1967.

Bandura, A.; Mahoney, M.J.; and Dirks, S.J. Discriminative activation and maintenance of contingent self-reinforcement. *Behaviour Research and Therapy*, 14:1-6, 1976.

Bandura, A.; Adams, N.E.; Hardy, A.B.; and Howells, G.N. Tests of the generality of self-efficacy theory. *Cognitive Therapy and Research*, 4:39-66, 1980.

Barlow, D.H. Behavior therapy: The next decade. *Behavior Therapy*, 11:315-328, 1980.

Beck, A.T., and Mahoney, M.J. Schools of "thought." *American Psychologist*, 34:93-98, 1979.

Bellack, A.S. Behavior therapy for weight reduction. *Addictive Behaviors*, 1:73-82, 1975.

Bellack, A.S. A comparison of self-reinforcement and self-monitoring in a weight reduction program. *Behavior Therapy*, 7:68-75, 1976.

Bellack, A.S. Behavioral treatment for obesity: Appraisal and recommendations. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*. Vol. 4. New York: Academic Press, 1977. pp. 1-38.

Bellack, A.S.; Rozensky, R.; and Schwartz, J. A comparison of two forms of self-monitoring in a behavioral weight reduction program. *Behavior Therapy*, 5:523-530, 1974.

Bergin, A.E. Introduction. In: Gurman, A.S., and Razin, A.M., eds. *Effective Psychotherapy: A Handbook of Research*. Oxford: Pergamon Press, 1977. pp. xv-xvi.

Bergin, A.E., and Strupp, H.H. *Changing Frontiers in the Science of Psychotherapy*. Chicago: Aldine-Atherton, 1972.

Bigelow, G.E.; Griffiths, R.R.; Liebson, I.; and Kaliszak, J.E. Double-blind evaluation of reinforcing and anorectic actions of weight control medications. *Archives of General Psychiatry*, 37:1118-1123, 1980.

Birnbrauer, J.S. Better living through behaviorism? *Journal of Applied Behavior Analysis*, 11:176-177, 1978.

Blaney, P.H. The effectiveness of cognitive and behavioral therapies. In: Rehm, L.P., ed. *Behavior Therapy for Depression: Present Status and Future Directions*. New York: Academic Press, 1981. pp. 1-32.

Blumberg, B.S. Comments on scientific process in clinical research. *Perspectives in Biology and Medicine*, 15-30, 1980.

Booth, D.A. Acquired behavior controlling energy intake and output. *Psychiatric Clinics of North America*, 1(3):545-579, 1978.

Bootzin, R.R. Effects of self-control procedures for insomnia. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 176-195.

Bootzin, R.R., and Nicassio, P.M. Behavioral treatments for insomnia. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*, Vol. 6. New York: Academic Press, 1978. pp. 1-45.

Bracke, P.; Arnow, B.; Kirmil-Gray, K.; Zarcone, V.; Eagleston, J.; Gibson, E.; and Thoresen, C. An evaluation of three treatments for chronic sleep disturbance in men: Effects on polysomnographic recorded sleep. *Sleep Research*, in press.

Brady, J.V. Learning and conditioning. In: Pomerleau, O.F., and Brady, J.P., eds. *Behavioral Medicine: Theory and Practice*. Baltimore: Williams & Wilkins, 1979. pp. 23-43.

Bray, G.A., ed. *Obesity in America*. DHEW Publication No. (NIH)79-359. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1979.

Brownell, K.D. Assessment in the treatment of eating disorders. In: Barlow, D.H., ed. *Behavioral Assessment of Adult Disorders*. New York: Guilford, 1981.

Brownell, K.D. Obesity: Behavioral treatments for a serious, prevalent, and refractory problem. In: Goodstein, R.K., ed. *Eating and Weight Disorders: Current Developments*. New York: Springer, 1982.

Brownell, K.D. Obesity: Understanding and treating a serious, prevalent and refractory disorder. *Journal of Consulting and Clinical Psychology*, in press.

Brownell, K.D., and Stunkard, A.J. Behavior therapy and behavior change: Uncertainties in programs for weight control. *Behaviour Research and Therapy*, 16:301, 1978.

Brownell, K.D., and Stunkard, A.J. Behavioral treatment of obesity in children. *American Journal of Diseases of Children*, 132:403-412, 1978.

Brownell, K.D., and Stunkard, A.J. Behavioral treatment for obese children and adolescents. In: Stunkard, A.J., ed. *Obesity*. Philadelphia: Saunders, 1980. pp. 415-437.

Brownell, K.D.; Heckerman, C.L.; Westlake, R.J.; Hayes, S.C.; and Monti, P.M. The effect of couples training and partner co-operativeness in the behavioral treatment of obesity. *Behaviour Research and Therapy*, 16:323-333, 1978.

Bruch, Hilde. The family as background to obesity. *International Journal of Family Psychiatry*, 1:77-94, 1980.

Buhler, L., and McKay, R. Development of women's self-help clinic. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 258-277.

Carroll, L.J., and Yates, B.T. Further evidence for the role of stimulus control training in facilitating weight reduction after behavioral therapy. *Behavior Therapy*, 12:287-291, 1981.

Castro, L., and Rachlin, H. Self-reward, self-monitoring, and self-punishment as feedback in weight control. *Behavior Therapy*, 11:38-48, 1980.

Catania, A.C. The myth of self-reinforcement. *Behaviorism*, 3:193-199, 1975.

Catania, A.C. Self-reinforcement revisited. *Behaviorism*, 4:157-162, 1976.

Cautela, J.R. Treatment of compulsive behavior by covert sensitization. *Psychological Record*, 16:33-41, 1966.

Cautela, J.R. Behavior therapy ain't what it used to be. Review of Yates, A.J. *Theory and Practice in Behavior Therapy*. In: *Contemporary Psychology*, 21:482-483, 1976.

Cautela, J.R., and Baron, M.G. Covert conditioning: A theoretical analysis. *Behavior Modification*, 1:351-368, 1977.

Chambliss, C.A., and Murray, E.J. Efficacy attribution, locus of control, and weight loss. *Cognitive Therapy and Research*, 3:349-353, 1979.

Ciminero, A.R.; Doleys, D.M.; and Williams, C.L. Journal literature on behavior therapy 1970-1976: Analysis of the subject characteristics, target behaviors, and treatment techniques. *Journal of Behavior Therapy and Experimental Psychiatry*, 9:301-307, 1978.

Coates, T.J. Theory, research, and practice in treating obesity: Are they really all the same? *Addictive Behaviors*, 2:95-104, 1977.

Cochrane, R., and Sobol, M.P. Myth and methodology in behaviour therapy research. In: Feldman, M.P., and Broadhurst, A., eds. *Theoretical and Experimental Bases of the Behaviour Therapies*. London: Wiley, 1976. pp. 365-404.

Cohen, S.J. *New Directions in Patient Compliance*. Lexington, Mass.: Lexington Books, 1979.

Collins, R.L.; Wilson, G.T.; and Rothblum, E. "The Comparative Efficacy of Cognitive and Behavioral Approaches in Weight Reduction." Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, 1980.

Craighead, L.W.; Stunkard, A.J.; and O'Brien, R.M. Behavior therapy and pharmacotherapy for obesity. *Archives of General Psychiatry*, 38:763-768, 1981.

Cummings, C.; Gordon, J.R.; and Marlatt, G.A. Relapse: Prevention and prediction. In: Miller, W.R., ed. *The Addictive Behaviors*. New York: Pergamon Press, 1980. pp. 291-321.

DiClemente, C.C. Self-efficacy and smoking cessation maintenance: A preliminary report. *Cognitive Therapy and Research*, 5:175-187, 1981.

Dunbar, J.M., and Stunkard, A.J. Adherence to diet and drug regimen. In: Levy, R.; Rifkind, B.; Dennis, B.; and Ernst, N., eds. *Nutrition, Lipids, and Coronary Heart Disease*. New York: Raven Press, 1979.

Dunkel, L.D., and Glaros, A. Comparison of self-instructional and stimulus control treatments for obesity. *Cognitive Therapy and Research*, 2:75-78, 1978.

Ellis, A. On Joseph Wolpe's espousal of cognitive-behavior therapy. *American Psychologist*, 34:98-99, 1979.

Elwood, J.M. Interpreting clinical trial results: Seven steps to understanding. Editorial. *Canadian Medical Association Journal*, 123:343-345, 1980.

Epstein, L.H., and Martin, J.E. Compliance and side effects of weight regulation groups. *Behavior Modification*, 1:551-558, 1977.

Eysenck, H.J. Behaviour therapy—dogma or applied science? In: Feldman, M.P., and Broadhurst, A., eds. *Theoretical and Experimental Bases of the Behaviour Therapies*. London: Wiley, 1976. pp. 333-363.

Farkas, G.M. An ontological analysis of behavior therapy. *American Psychologist*, 35:364-374, 1980.

Feldman, M.P. The behaviour therapies and society. In: Feldman, M.P., and Broadhurst, A., eds. *Theoretical and Experimental Bases of the Behaviour Therapies*. London: Wiley, 1976. pp. 405-434.

Ferster, C.B. A laboratory model of psychotherapy: The boundary between clinical practice and experimental psychology. In: Sjödén, P.O.; Bates, S.; and

Dockens, W.S.,III, eds. *Trends in Behavior Therapy*. New York: Academic Press, 1979. pp. 23-38.

Folkins, C.H., and Sime, W.E. Physical fitness training and mental health. *American Psychologist*, 36:373-389, 1981.

Foreyt, J.P.; Scott, L.W.; and Gotto, A.M., Jr. Diet modification in the community. In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel, 1976. pp. 186-195.

Foreyt, J.P.; Scott, L.W., and Gotto, A.M. Weight control and nutrition education programs in occupational settings. *Public Health Reports*, 95:127-136, 1980.

Franks, C.M. Pavlovian conditioning approaches. In: Levis, D.J., ed. *Learning Approaches to Therapeutic Behavior Change*. Chicago: Aldine Publishing, 1970. pp. 108-143.

Franks, C.M., and Wilson, G.T. *Annual Review of Behavior Therapy Theory and Practice*. New York: Brunner/Mazel, 1978.

Fuchs, C.Z., and Rehm, L.P. A self-control behavior therapy program for depression. *Journal of Consulting and Clinical Psychology*, 45:206-215, 1977.

Gambrill, E.D. *Behavior Modification: Handbook of Assessment, Intervention, and Evaluation*. San Francisco: Jossey-Bass, 1977.

Glasgow, R.E., and Rosen, G.M. Behavioral bibliotherapy: A review of self-help behavior therapy manuals. *Psychological Bulletin*, 85(1):1-23, 1978.

Glasgow, R.E., and Rosen, G.M. Self-help behavior therapy manuals: Recent developments and clinical usage. *Clinical Behavior Therapy Review*, 1(1):1-19, 1979.

Goldfried, M.R. The use of relaxation and cognitive relabeling as coping skills. In: Stuart, R.B., ed. *Behavioral Self-Management. Strategies, Techniques, and Outcomes*. New York: Brunner/Mazel, 1977. pp. 82-116.

Goldfried, M.R. On the search for effective intervention strategies. *The Counseling Psychologist*, 7:28-29, 1978.

Goldfried, M.R. Anxiety reduction through cognitive-behavioral intervention. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 117-152.

Goldfried, M.R. Toward the delineation of therapeutic change principles. *American Psychologist*, 35:991-999, 1980.

Goldfried, M.R., and Merbaum, M., eds. *Behavior Change Through Self-Control*. New York: Holt, Rinehart and Winston, 1973.

Goldiamond, I. Self-control procedures in personal behavior problems. *Psychological Reports*, 17:851-868, 1965.

Goldiamond, I. A diary of self-modification. *Psychology Today*, 7(Nov.): 95-102, 1973.

Goldiamond, I. Self-reinforcement. *Journal of Applied Behavior Analysis*, 9:509-514, 1976*a*.

Goldiamond, I. Fables, armadyllics, and self-reinforcement. *Journal of Applied Behavior Analysis*, 9:521-525, 1976*b*.

Goldiamond, I. Literary behavior analysis. *Journal of Applied Behavior Analysis*, 10:527-529, 1977.

Goldiamond, I. The professional as a double-agent. *Journal of Applied Behavior Analysis*, 11:178-184, 1978.

Goldman, L. Behavior therapy faces middle age. *The Counseling Psychologist*, 7:25-27, 1978.

Grimm, L.G. The maintenance of self- and drug-attributed behavior change: A critique. *Journal of Abnormal Psychology*, 89:282-285, 1980.

Grunbaum, A. The placebo concept. *Behaviour Research and Therapy*, 19:157-167, 1981.

Hagen, R.L. Theories of obesity: Is there any hope for order? In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel, 1976. pp. 3-19.

Hall, S.M., and Hall, R.G. Outcome and methodological considerations in behavioral treatment of obesity. *Behavior Therapy*, 5:352-364, 1974.

Hall, S.M., and Havassy, B. The obese woman: Causes, correlates, and treatment. *Professional Psychology*, 12:163-170, 1981.

Hall, S.M.; Hall, R.G.; DeBoer, G., and O'Kulitch, P. Self and external management compared with psychotherapy in the control of obesity. *Behaviour Research and Therapy*, 15:89-95, 1977.

Harris, M.B. Self-directed program for weight control: A pilot study. *Journal of Abnormal Psychology*, 74:263-270, 1969.

Hartman, L.M. A biobehavioral model of obesity. *Psychotherapy and Psychosomatics*, 33:205-213, 1980.

Haynes, R.B.; Taylor, D.W.; and Sackett, D.L. *Compliance in Health Care*. Baltimore: The Johns Hopkins University Press, 1979.

Heckerman, C.L., and Prochaska, J.O. Development and evaluation of weight reduction procedures in a health maintenance organization. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 215-229.

Hersen, M. Complex problems require complex solutions. *Behavior Therapy*, 12: 15-29, 1981.

Hilford, N.G. Self-initiated behavior change by depressed women following verbal therapy. *Behavior Therapy*, 6:703, 1975.

Hoiberg, A.; Bernard, S.P.; and Watten, R.H. Correlates of obesity. *Journal of Clinical Psychology*, 36:983-991, 1980.

Holland, J.G. Behaviorism: Part of the problem or part of the solution? *Journal of Applied Behavior Analysis*, 11:163-174, 1978.

Holland, J.G. Toward a solution: A rejoinder. *Journal of Applied Behavior Analysis*, 11:185-187, 1978.

Hollon, S.D., and Beck, A.T. Cognitive therapy of depression. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 153-203.

Hollon, S.D., and Kendall, P.C. Cognitive-behavioral interventions: Theory and procedure. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 445-454.

Homme, L.E. Perspectives in psychology: XXIV control of coverants, the operants of the mind. *Psychological Record*, 15:501-511, 1965.

Hunt, W.A.; Matarazzo, J.D.; Weiss, S.M.; and Gentry, W.D. Associative learning, habit, and health behavior. *Journal of Behavioral Medicine*, 2:113-124, 1979.

Jahn, D.L., and Lichstein, K.L. The resistive client: A neglected phenomenon in behavior therapy. *Behavior Modification*, 4:303-320, 1980.

Jeffery, R.W.; Thompson, P.D.; and Wing, R.R. Effects on weight reduction of strong monetary contracts for calorie restriction or weight loss. *Behaviour Research and Therapy*, 16:363-369, 1978.

Jeffery, R.W.; Wing, R.R.; and Stunkard, A.J. Behavioral treatment of obesity: The state of the art 1976. *Behavior Therapy*, 9:189-199, 1978.

Jeffrey, D.B. Self-control: Methodological issues and research trends. In: Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif: Brooks/Cole, 1974*a*. pp. 166-199.

Jeffrey, D.B. A comparison of the effects of external control and self-control on the modification and maintenance of weight. *Journal of Abnormal Psychology*, 83:404-410, 1974*b*.

Jeffrey, D.B. Treatment outcome issues in obesity research. In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel 1976. pp. 20-29.

Jones, R.T.; Nelson, R.E.; and Kazdin, A.E. The role of external variables in self-reinforcement: A review. *Behavior Modification*, 1:147-178, 1977.

Kanfer, F.H. Self-management methods. In: Kanfer, F.H., and Goldstein, A.P., eds. *Helping People Change: A Textbook of Methods*. New York: Pergamon Press, 1975. pp. 309-355.

Kanfer, F.H. The many faces of self-control, or behavior modification changes its focus. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques, and Outcomes*. New York: Brunner/Mazel, 1977. pp. 1-48.

Kanfer, F.H. Personal control, social control, and altruism: Can society survive the age of individualism? *American Psychologist*, 34:231-239, 1979.

Kanfer, F.H. Self-management: Strategies and tactics. In: Goldstein, A.P., and Kanfer, F.H., eds. *Maximizing Treatment Gains: Transfer-Enhancement in Psychotherapy*. New York: Academic Press, 1979. pp. 185-224.

Kanfer, F.H., and Busemeyer, J.R. The use of problem-solving and decision-making in behavior therapy. *Clinical Psychology Review*, in press.

Kanfer, F.H., and Goldstein, A.P., eds. *Helping People Change*. New York: Pergamon Press, 1975.

Kanfer, F.H., and Grimm, L.G. Managing clinical change: A process model of therapy. *Behavior Modification*, 4(4):419-444, 1980.

Kanfer, F.H., and Hagerman, S. The role of self-regulation. In: Rehm, L.P., ed. *Behavior Therapy for Depression: Present Status and Future Directions*. New York: Academic Press, 1981. pp. 173-179.

Kanfer, F.H., and Marston, A.R. Determinants of self-reinforcement in human learning. *Journal of Experimental Psychology*, 66:245-254, 1963.

Kanfer, F.H.; Cox, L.E.; Greiner, J.M.; and Karoly, P. Contracts, demand characteristics, and self-control. *Journal of Personality and Social Psychology*, 30:605-619, 1974.

Karoly, P. Behavioral self-management in children: Concepts, methods, issues, and directions. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*. Vol. 5. New York: Academic Press, 1977. pp. 197-262.

Karoly, P., and Kanfer, F.H., eds. *Self-Management and Behavior Change*. New York: Pergamon Press, 1982.

Kazdin, A.E. Self-monitoring and behavior change. In: Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif.: Brooks/Cole, 1974. pp. 218-246.

Kazdin, A.E. Methodological and interpretive problems of single-case experimental designs. *Journal of Consulting and Clinical Psychology*, 46:629-642, 1978.

Kazdin, A.E. Fictions, factions, and functions of behavior therapy. *Behavior Therapy*, 10:629-654, 1979.

Kazdin, A.E. *Behavior Modification in Applied Settings*. Homewood, Ill.: The Dorsey Press, 1980.

Kazdin, A.E. *Research Design in Clinical Psychology*. New York: Harper & Row, 1980.

Kazdin, A.E., and Hersen, M. The current status of behavior therapy. *Behavior Modification*, 4:283-302, 1980.

Kazdin, A.E., and Wilson, G.T. *Evaluation of Behavior Therapy: Issues, Evidence, and Research Strategies*. Cambridge, Mass.: Ballinger Publishing, 1978*a*.

Kazdin, A.E., and Wilson, G.T. Criteria for evaluating psychotherapy. *Archives of General Psychiatry*, 35:407-416, 1978*b*.

Kegan, R. Can there be a meaning to being a behavior therapist?: A reply. *The Counseling Psychologist*, 7:30-32, 1978.

Kendall, P.C., and Finch, A.J., Jr. Developing nonimpulsive behavior in children: Cognitive-behavioral strategies for self-control. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 37-79.

Kendall, P.C., and Hollon, S.D. Cognitive-behavioral interventions: Overview and current status. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 1-9.

Kingsley, R.G., and Wilson, G.T. Behavior therapy for obesity: A comparative investigation of long-term efficacy. *Journal of Consulting and Clinical Psychology*, 45:288-298, 1977.

Kirmil-Gray, K.; Eagleston, J.; Thoresen, C.; and Zarcone, V. An evaluation of two treatments to help drug dependent women withdraw from sleeping medication: Effects on daytime stress and self-efficacy. *Sleep Research*, in press *a*.

Kirmil-Gray, K.; Eagleston, J.; Thoresen, C.; and Zarcone, V. An evaluation of two treatments to help drug dependent women withdraw from sleeping medication: Effects on polysomnographically recorded sleep. *Sleep Research*, in press *b*.

Knapp, J.R., and Delprato, D.J. Willpower, behavior therapy, and the public. *The Psychological Record*, 30:477-482, 1980.

Knapp, T.J., and Sholtahl, S.A. Ben Franklin as a behavior modifier: A note. *Behavior Therapy*, 5:656-660, 1974.

Krasnegor, N.A. Analysis and modification of substance abuse: A behavioral overview. *Behavior Modification*, 4:35-56, 1980.

Lambert, M.J. Psychotherapy outcome research. *American Psychologist*, 34:91, 1979.

Lansky, D. A methodological analysis of research on adherence and weight loss: Reply to Brownell and Stunkard (1978). *Behavior Therapy*, 12:144-149, 1981.

Lanyon, R.I., and Lanyon, B.J. Behavioural assessment and decision-making: The design of strategies for therapeutic behaviour change. In: Feldman, M.P., and Broadhurst, A., eds. *Theoretical and Experimental Bases of the Behaviour Therapies*. London: Wiley, 1976. pp. 289-329.

Lazarus, A.A. A matter of emphasis. *American Psychologist*, 34:100, 1979.

Ledwidge, B. Cognitive behavior modification: A step in the wrong direction? *Psychological Bulletin*, 85(2):353-375, 1978.

Ledwidge, B. Cognitive behavior modification or new ways to change minds: Reply to Mahoney and Kazdin. *Psychological Bulletin*, 86:1050-1053, 1979.

Leon, G.R. Current directions in the treatment of obesity. *Psychological Bulletin*, 83: 557-578, 1976.

Leon, G.R. Cognitive-behavior therapy for eating disturbances. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 357-388.

Leon, G.R.; Roth, L.; and Hewitt, M.I. Eating patterns, satiety and self-control behavior of obese persons during weight reduction. *Obesity and Bariatric Medicine*, 6:172-181, 1977.

Levitz, L.S., and Stunkard, A.J. A therapeutic coalition for obesity: Behavior modification and patient self-help. *American Journal of Psychiatry*, 131:423-427, 1974.

Lewinsohn, P.M., and Arconad, M. Behavioral treatment of depression: A social learning approach. In: Clarkin, J., and Glazer, H., eds. *Behavioral and Directive Treatment Strategies*. New York: Garland Press, 1981.

Lewinsohn, P.M.; Munoz, R.F.; Youngren, M.A.; and Zeiss, A.M. *Control Your Depression*. Englewood Cliffs, N.J.: Prentice-Hall, 1978.

Liberman, B.L. The role of mastery in psychotherapy: Maintenance of improvement and prescriptive change. In: Frank, J.D.; Hoehn-Saric, R.; Imber, S.D.; Liberman, B.L.; and Stone, A.R. *Effective Ingredients of Successful Psychotherapy*. New York: Brunner/Mazel, 1978. pp. 35-72.

Lichtenstein, E., and Brown, R. Current trends in the modification of cigarette dependence. In: Bellack, A.S., and Hersen, M., eds. *The International Handbook of Behavioral Modification and Therapy*. Vol. II. New York: Plenum Press, 1980.

Lieberman, D.A. Behaviorism and the mind: A (limited) call for a return to introspection. *American Psychologist*, 34:319-333, 1979.

Little, L.M., and Curran, J.P. Covert sensitization: A clinical procedure in need of some explanations. *Psychological Bulletin*, 85:513-531, 1978.

Little, V.L., and Kendall, P.C. Cognitive-behavioral interventions with delinquents: Problem solving, role-taking, and self-control. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 81-115.

Loro, A.D., Jr., and Orleans, C.S. Eating disorders: A bibliography of recent clinical and research reports. *Professional Psychology*, 11:946-948, 1980.

Loro, A.D., Jr., and Power, D.D. Updated bibliography of behavioral approaches to weight reduction and obesity: 1972-1978. *Professional Psychology*, 11(4):648-659, 1980.

Loro, A.D., Jr.; Fisher, E.B., Jr.; and Levenkron, J.C. Comparison of established and innovative weight-reduction treatment procedures. *Journal of Applied Behavior Analysis*, 12:141-155, 1979.

Loro, B. Bibliography of behavioral approaches to weight reduction and obesity from 1962 through 1976. *Professional Psychology*, 9(2):278-289, 1978.

Lovibond, S.H. Behavioral control of excessive drinking. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*. Vol. 5. New York: Academic Press, 1977. pp. 63-109.

Maher, B.A. Behaviorism is not empty-headed. Review of Mahoney, M.J. *Cognition and Behavior Modification*. In: *Contemporary Psychology*, 21:396-397, 1976.

Mahoney, M.J. Self-reward and self-monitoring techniques for weight control. *Behavior Therapy*, 5:48-57, 1974.

Mahoney, M.J. Research issues in self-management. In: Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif.: Brooks/Cole, 1974. pp. 247-262.

Mahoney, M.J. *Cognition and Behavior Modification*. Cambridge, Mass.: Ballinger, 1974.

Mahoney, M.J. Fat fiction. *Behavior Therapy*, 6:416-418, 1975.

Mahoney, M.J. The behavioral treatment of obesity: A reconnaissance. *Biofeedback and Self-Regulation*, 1:127-133, 1976*(a)*.

Mahoney, M.J. Terminal terminology: A self-regulated response to Goldiamond. *Journal of Applied Behavior Analysis*, 9:515-517, 1976*(b)*.

Mahoney, M.J. Reflections on the cognitive-learning trend in psychotherapy. *American Psychologist*, 32:5-13, 1977.

Mahoney, M.J. Experimental methods and outcome evaluation. *Journal of Consulting and Clinical Psychology*, 46:660-672, 1978.

Mahoney, M.J. Cognitive skills and athletic performance. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 423-443.

Mahoney, M.J., and Arnkoff, D. Cognitive and self-control therapies. In: Garfield, S.L., and Bergin, A.E., eds. *Handbook of Psychotherapy and Behavior Change*. 2d ed. New York: Wiley, 1978. pp. 689-722.

Mahoney, M.J., and Arnkoff, D.B. Self-management. In: Pomerleau, O.F., and Brady, J.P., eds. *Behavioral Medicine: Theory and Practice*. Baltimore: Williams & Wilkins, 1979. pp. 75-96.

Mahoney, M.J., and Kazdin, A.E. Cognitive behavior modification: Misconceptions and premature evacuation. *Psychological Bulletin*, 86:1044-1049, 1979.

Mahoney, M.J., and Mahoney, K. Treatment of obesity: A clinical exploration. In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel, 1976. pp. 30-39.

Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif.: Brooks/Cole, 1974.

Mahoney, M.J.; Moura, N.G.M.; and Wade, T.C. Relative efficacy of self-reward, self-punishment, and self-monitoring techniques for weight loss. *Journal of Consulting and Clinical Psychology*, 40:404-407, 1973.

Mann, R.A. The behavior-therapeutic use of contingency contracting to control an adult behavior problem: Weight control. *Journal of Applied Behavior Analysis*, 5: 99-109, 1972.

Marlatt, G.A. Alcohol use and problem drinking: A cognitive-behavioral analysis. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 319-355.

Marlatt, G.A., and Gordon, J.R. Determinants of relapse: Implications for the maintenance of behavior change. In: Davidson, P.O., and Davidson, S.M., eds. *Behavioral Medicine: Changing Health Lifestyles*. New York: Brunner/Mazel, 1980. pp. 410-452.

Marlatt, G.A., and Marques, J.K. Meditation, self-control and alcohol use. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 177-153.

Marston, A.R., and Feldman, S.E. Toward the use of self-control in behavior modification. *Journal of Consulting and Clinical Psychology*, 39:429-433, 1972.

Martin, J. Laboratory studies of self-reinforcement (SR) phenomena. *The Journal of General Psychology*, 101:103-149, 1979.

Martin, J. External versus self-reinforcement: A review of methodological and theoretical issues. *Canadian Journal of Behavioral Science*, 12(2):111-125, 1980.

Matarazzo, J.D. Behavioral health and behavioral medicine: Frontiers for a new health psychology. *American Psychologist*, 35:807-817, 1980.

McFall, R.M. Parameters of self-monitoring. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 196-214.

McFall, R.M. Smoking-cessation research. *Journal of Consulting and Clinical Psychology*, 46:703-712, 1978.

McNamara, J.R. Behavior therapy in the seventies: Some changes and current issues. *Psychotherapy: Theory, Research and Practice*, 17:2-9, 1980.

McReynolds, W.T. Behavior therapy for obesity: Another fad or a new set of facts? II. A study of two behavior modification procedures with nutritionists as therapists. *Nebraska Medical Journal*, 61:196-198, 1976.

McReynolds, W.T. Behavior therapy for obesity: Another fad or a new set of facts? III. Results. *Nebraska Medical Journal*, 61:232-236, 1976.

McReynolds, W.T. Behavior therapy for obesity: Another fad or a new set of facts? IV. Summary of research findings and a caution. *Nebraska Medical Journal*, 61:289-290, 1976.

McReynolds, W.T.; Lutz, R.N.; Paulsen, B.K.; and Kohrs, M.B. Weight loss resulting from two behavior modification procedures with nutritionists as therapists. *Behavior Therapy*, 7:283-291, 1976.

Meichenbaum, D. Self-instructional methods. In: Kanfer, F.H., and Goldstein, A.P., eds. *Helping People Change: A Textbook of Methods*. New York: Pergamon Press, 1975. pp. 157-391.

Miller, W.R. Behavioral self-control training in the treatment of problem drinkers. In: Stuart, R.B., ed. *Behavioral Self-Managment: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 154-175.

Miller, W.R. *The Addictive Behaviors: Treatment of Alcoholism, Drug Abuse, Smoking and Obesity*. Pergamon Press, 1980.

Mischel, W. Theory and research on the antecedents of self-imposed delay of reward. In: Maher, B.A., ed. *Progress in Experimental Research*. Vol. 3. New York: Academic Press, 1966. pp. 85-132.

Mischel, W. Toward a cognitive social learning reconceptualization of personality. *Psychological Review*, 80:252-283, 1973.

Mischel, W., and Baker, N. Cognitive transformations of reward objects through instructions. *Journal of Personality and Social Psychology*, 31:254-261, 1975.

Morganstern, K.P. Cigarette smoke as a noxious stimulus in self-managed aversion therapy for compulsive eating: Technique and case illustration. *Behavior Therapy*, 5:255-260, 1974.

Mountjoy, P.T., and Sundberg, M.L. Ben Franklin the protobehaviorist 1: Self-management of behavior. *The Psychological Record*, 31:13-24, 1981.

Musante, G.J. Affective and cognitive behavior change: Essential components to comprehensive obesity treatment. In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel, 1976. pp. 177-185.

Musante, G.J. The dietary rehabilitation clinic: Evaluative report of a behavioral and dietary treatment of obesity. *Behavior Therapy*, 7:198-204, 1976.

Nathan, P.E. Alcoholism. In: Leitenberg, H., ed. *Handbook of Behavior Modification and Behavior Therapy*. Englewood Cliffs, N.J.: Prentice-Hall, 1976. pp. 3-44.

Nathan, P.E., and Lansky, D. Common methodological problems in research on the addictions. *Journal of Consulting and Clinical Psychology*, 46:713-726, 1978.

Nelson, R.O. Assessment and therapeutic functions of self-monitoring. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*. Vol. 5. New York: Academic Press, 1977. pp. 263-308.

Nelson, R.O. Methodological issues in assessment via self-monitoring. In: Cone, J.D., and Hawkins, R.P., eds. *Behavioral Assessment: New Directions in Clinical Psychology*. New York: Brunner/Mazel, 1977. pp. 217-240.

Nelson, R.O., and Hayes, S.C. Theoretical explanations for reactivity in self-monitoring. *Behavior Modification*, 5:3-14, 1981.

Nelson, R.O.; Spong, R.T.; Hayes, S.C.; and Graham, C.A. "Self-reinforcement: Cues or Consequences?" Paper presented to the American Psychological Association, 1979.

Nolan, J.D. Self-control procedures in the modification of smoking behavior. *Journal of Consulting and Clinical Psychology*, 32:92-93, 1968.

Novaco, R.W. The cognitive regulation of anger and stress. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 241-285.

O'Leary, K.D., and Borkovec, T.D. Conceptual, methodological, and ethical problems of placebo groups in psychotherapy research. *American Psychologist*, 33:821-830, 1978.

O'Leary, S.G., and Dubey, D.R. Applications of self-control procedures by children: A review. *Journal of Applied Behavior Analysis*, 12:449-465, 1979.

Olsen, L.A. Bandura's self system sans Sullivan. *American Psychologist*, 34:439, 1979.

Öst, L.G., and Götestam, K.G. Behavioral and pharmacological treatments for obesity: An experimental comparison. *Addictive Behaviors*, 1:331-338, 1976.

Pechacek, T.F., and Danaher, B.G. How and why people quit smoking: A cognitive-behavioral analysis. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 389-422.

Penick, S.B.; Filion, R.; Fox, S.; and Stunkard, A.J. Behavior modification in the treatment of obesity. *Psychosomatic Medicine*, 33:49-55, 1971.

Penick, S.B.; Filion, R.; Fox, S.; and Stunkard, A.J. Behavior modification in the treatment of obesity. In: Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif.: Brooks/Cole, 1974. pp. 291-299.

Pereboom, A.C. Bandura's self system: Some reservations. *American Psychologist*, 34: 438-439, 1979.

Phillips, F.; Hooper, J.; Batten, C.; Dexall, M.; Beamish, D.; Pollok, T.; and McCann, G. Power reversal and self-help: The Vancouver Mental Patients' Association. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 306-316.

Pomerleau, O.F., and Brady, J.P. Introduction: The scope and promise of behavioral medicine. In: Pomerleau, O.F., and Brady, J.P., eds. *Behavioral Medicine: Theory and Practice*. Baltimore: Williams & Wilkins, 1979. pp. xi-xxvi.

Rachlin, H. Self-control: Part I. In: Catania, A.C., and Brigham, T.A., eds. *Handbook of Applied Behavior Analysis: Social and Instructional Processes*. New York: Irvington Publishers, 1978. pp. 246-258.

Rachman, S. Clinical applications of observational learning, imitation, and modeling. *Behavior Therapy*, 3:379-397, 1972.

Rachman, S.J. Observational learning and therapeutic modelling. In: Feldman, M.P., and Broadhurst, A., eds. *Theoretical and Experimental Bases of the Behaviour Therapies*. London: Wiley, 1976. pp. 193-226.

Rachman, S. Perceived self-efficacy. *Advances in Behavior Therapy*, 1:4, 1978.

Rehm, L.P. A self-control model of depression. *Behavior Therapy*, 8:787-804, 1977.

Rehm, L.P., ed. *Behavior Therapy for Depression: Present Status and Future Directions*. New York: Academic Press, 1981.

Rehm, L.P. Self-management in depression. In: Karoly, P., and Kanfer, F.H., eds. *The Psychology of Self-Management: From Theory to Practice*. New York: Pergamon Press, in press.

Rehm, L.P., and Kaslow, N.J. Behavioral approaches to depression: Results and clinical recommendations. *Clinical Behavior Therapy Review*, in press.

Rehm, L.P., and Kornblith, S.J. Behavior therapy for depression: A review of recent developments. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*, Vol. 7. New York: Academic Press, 1979. pp. 277-318.

Rim, D.C., and Masters, J.C. *Behavior Therapy: Techniques and Empirical Findings*. 2d ed. New York: Academic Press, 1979.

Risley, T.R. The social context of self-control. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 71-81.

Romanczyk, R.G. Self-monitoring in the treatment of obesity: Parameters of reactivity. *Behavior Therapy*, 5:531,540, 1974.

Romanczyk, R.G.; Tracey, D.A.; Wilson, G.T.; and Thorpe, G.L. Behavioral techniques in the treatment of obesity: A comparative analysis. *Behaviour Research and Therapy*, 11:629-640, 1973.

Rosen, G.M. Suggestions for an editorial policy on the review of self-help treatment books. Abstract. *Behavior Therapy*, 9:960, 1978.

Rosenbaum, M.S., and Drabman, R.S. Self-control training in the classroom: A review and critique. *Journal of Applied Behavior Analysis*, 12:467-485, 1979.

Rosenthal, B.S., and Marx, R.D. Differences in eating patterns of successful and unsuccessful dieters, untreated overweight and normal weight individuals. *Addictive Behaviors*, 3:129-134, 1978.

Roth, D.; Rehm, L.P.; and Rozensky, R.H. Self-reward, self-punishment and depression. *Psychological Reports*, 47:3-7, 1980.

Rotter, J.B. Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Consulting and Clinical Psychology*, 43:56-67, 1975.

Rozensky, R.H., and Bellack, A.S. Individual differences in self-reinforcement style and performance in self- and therapist-controlled weight reduction programs. *Behaviour Research and Therapy*, 14:357-364, 1976.

Shapiro, D.H., Jr., and Zifferblatt, S.M. Zen meditation and behavioral self-control: Similarities, differences, and clinical applications. *American Psychologist*, July 1976.

Skinner, B.F. *Science and Human Behavior*. New York: Free Press, 1965. (Macmillan 1953 original publisher.)

Smoking and Health: A Report of the Surgeon General. DHEW Publication No. (PHS)79-50066. Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1979.

Snortum, J.R. Ben Franklin's pursuit of perfection. *Psychology Today*, April 1976. pp. 80 and 83.

Sobell, M.B., and Sobell, L.C. Second-year treatment outcome of alcoholics treated by individualized behavior therapy: Results. *Behavior Research and Therapy*, 14:196-216, 1976.

Strupp, H.H. A reformulation of the dynamics of the therapist's contribution. In: Gurman, A.S., and Razin, A.M., eds. *Effective Psychotherapy: A Handbook of Research*. Oxford: Pergamon Press, 1977. pp. 3-22.

Stuart, R.B. Behavioral control of overeating. *Behaviour Research and Therapy*, 5: 357-365, 1967.

Stuart, R.B. Situational versus self-control. In: Rubin, R.D.; Fensterheim, H.; Henderson, J.D.; and Ullmann, L.P., eds. *Advances in Behavior Therapy: Proceedings of the Fourth Conference of the Association for Advancement of Behavior Therapy*. Vol. 3. New York: Academic Press, 1972.

Stuart, R.B. Self-help group approach to self-management. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 278-305.

Stunkard, A.J. Behavioral treatment of obesity: Failure to maintain weight loss. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 317-350.

Stunkard, A.J. Behavioral medicine and beyond: The example of obesity. In: Pomerleau, O.F., and Brady, J.P., eds. *Behavioral Medicine: Theory and Practice*. Baltimore: Williams & Wilkins, 1979. pp. 279-298.

Stunkard, A.J. The social environment and the control of obesity. In: Stunkard, A.J., ed. *Obesity*. Philadelphia: W.B. Saunders, 1980. pp. 438-462.

Stunkard, A.J., and Brownell, K.D. Behaviour therapy and self-help programmes for obesity. In: Munro, J.F., ed. *The Treatment of Obesity*. Baltimore: University Park Press, 1979. pp. 199-230.

Stunkard, A.J., and Brownell, K.D. Work-site treatment for obesity. *American Journal of Psychiatry*, 137(2):252-253, 1980.

Stunkard, A.J., and Mahoney, M.J. Behavioral treatment of the eating disorders. In: Leitenberg, H., ed. *Handbook of Behavior Modification and Behavior Therapy*. Englewood Cliffs, N.J.: Prentice-Hall, 1976. pp. 45-73.

Stunkard, A.J., and Penick, S.B. Behavior modification in the treatment of obesity: The problem of maintaining weight loss. *Archives of General Psychiatry*, 36:801-806, 1979.

Suedfeld, P. Using environmental restriction to initiate long-term behavior change. In: Stuart, R.B., ed. *Behavioral Self-Management: Strategies, Techniques and Outcomes*. New York: Brunner/Mazel, 1977. pp. 230-257.

Szpiler, J.A., and Sulzer-Azaroff, B. "An Examination of Behavioral and Personality Correlates as Predictors of Dietary Success in a Self-Managed Program of Weight Reduction." Paper presented at the 13th annual meeting of the Asso.iation for Advancement of Behavior Therapy, Dec., 1979.

Thoresen, C.E. Behavioral means and humanistic ends. In: Mahoney, M.J., and Thoresen, C.E., eds. *Self-Control: Power to the Person*. Monterey, Calif.: Brooks/Cole, 1974.

Thoresen, C. *The Behavior Therapist*. Monterey, Calif.: Brooks/Cole, 1980.

Thoresen, C.E., and Coates, T.J. Behavioral self-control: Some clinical concerns. In: Hersen, M.; Eisler, R.M.; and Miller, P.M., eds. *Progress in Behavior Modification*. Vol. 2. New York: Academic Press, 1976. pp. 307-352.

Thoresen, C.E., and Coates, T.J. What does it mean to be a behavior therapist? *The Counseling Psycholcgist*, 7:3-21, 1978.

Thoresen, C.E., and Mahoney, M.J. *Behavioral Self-Control*. New York: Holt, Rinehart and Winston, 1974.

Thoresen, C.E., and Wilbur, C.S. Some encouraging thoughts about self-reinforcement. *Journal of Applied Behavior Analysis*, 9:518-520, 1976.

Thoresen, C.E.; Coates, T.J.; Kirmil-Gray, K.; and Rosekind, M.R. Behavioral self-managment in treating sleep-maintenance insomnia. *Journal of Behavioral Medicine*, 4:41-52, 1981.

Turk, D.C., and Genest, M. Regulation of pain: The application of cognitive and behavioral techniques for prevention and remediation. In: Kendall, P.C., and Hollon, S.D., eds. *Cognitive-Behavioral Interventions. Theory, Research, and Procedures*. New York: Academic Press, 1979. pp. 287-318.

Turner, R.W.; Ward, M.F.; and Turner, D.J. Behavioral treatment for depression: An evaluation of therapeutic components. *Journal of Clinical Psychology*, 35:166-175, 1979.

Vincent, J.P.; Schiavo, L.; and Nathan, R. Effect of deposit contracts and distractibility on weight loss and maintenance. In: Williams, B.J.; Martin, S.; and Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Management*. New York: Brunner/Mazel, 1976. pp. 65-97.

Wallace, I. Self-control techniques of famous novelists. *Journal of Applied Behavior Analysis*, 10:515-525, 1977.

Weimer, W.B. Overview of a cognitive conspiracy: Reflections on the volume. In: Weimer, W.B., and Palermo, D.S., eds. *Cognition and the Symbolic Processes*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1974. pp. 415-442.

Williams, B.J.; Martin, S.; Foreyt, J.P., eds. *Obesity: Behavioral Approaches to Dietary Managment*. New York: Brunner/Mazel, 1976.

Williams, M.W., and Riser, E.A. Teaching the obese to act and think thin. *Behavioral Medicine*, August 1978. pp. 26-27.

Wilson, G.T. The importance of being theoretical. Comments on Bandura's "Self-efficacy: Toward a unifying theory of behavioral change." In: Eysenck, H.J., and Rachman, S., eds. *Advances in Behaviour Research and Therapy*. Vol. I, Part 1. Oxford: Pergamon Press, 1977. pp. 217-230.

Wilson, G.T. Cognitive behavior therapy: Paradigm shift or passing phase? In: Foreyt, J.P., and Rathjen, D., eds. *Cognitive Behavior Therapy: Research and Application*. New York: Plenum Press, 1978*a*.

Wilson, G.T. Methodological considerations in treatment outcome research on obesity. *Journal of Consulting and Clinical Psychology*, 46:687-702, 1978*b*.

Wilson, G.T. Behavioral treatment of obesity: Maintenance strategies and long-term efficacy. In: Sjödén, P.O.; Bates, S.; and Dockens, W.S.,III, eds. *Trends in Behavior Therapy*. New York: Academic Press, 1979. pp. 199-216.

Wilson, G.T. Behavior modification and the treatment of obesity. In: Stunkard, A.J., ed. *Obesity*. Philadelphia: W.B. Saunders, 1980. pp. 325-344.

Wilson, G.T. Cognitive factors in lifestyle changes: A social learning perspective. In: Davidson, P.O., and Davidson, S.M., eds. *Behavioral Medicine: Changing Health Lifestyles*. New York: Brunner/Mazel, 1980. pp. 3-37.

Wilson, G.T., and Brownell, K.D. Behavior therapy for obesity: An evaluation of treatment outcome. *Advances in Behaviour Research and Therapy*, 3:49-86, 1980.

Wilson, G.T., and Evans, I.M. The therapist-client relationship in behavior therapy. In: Gurman, A.S., and Razin, A.M., eds. *Effective Psychotherapy: A Handbook of Research*. Oxford: Pergamon Press, 1977. pp. 544-565.

Wilson, G.T., and O'Leary, K.D. *Principles of Behavior Therapy*. Englewood Cliffs, N.J.: Prentice-Hall, 1980.

Wollersheim, J.P. Effectiveness of group therapy based upon learning principles in the treatment of overweight women. *Journal of Abnormal Psychology*, 76:462-474, 1970.

Wollersheim, J.P. Follow-up of behavioral group therapy for obesity. *Behavior Therapy*, 8:996-998, 1977.

Wolpe, J. Cognition and causation in human behavior and its therapy. *American Psychologist*, 33:437-446, 1978.

Wooley, S.C.; Wooley, O.W.; and Dyrenforth, S.R. Theoretical, practical, and social issues in behavioral treatments of obesity. *Journal of Applied Behavior Analysis*, 12: 3-25, 1979.

Yates, B.T. Improving the cost-effectiveness of obesity programs: Three basic strategies for reducing the cost per pound. *International Journal of Obesity*, 2: 249-266, 1978.

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